Australians-Past and Present

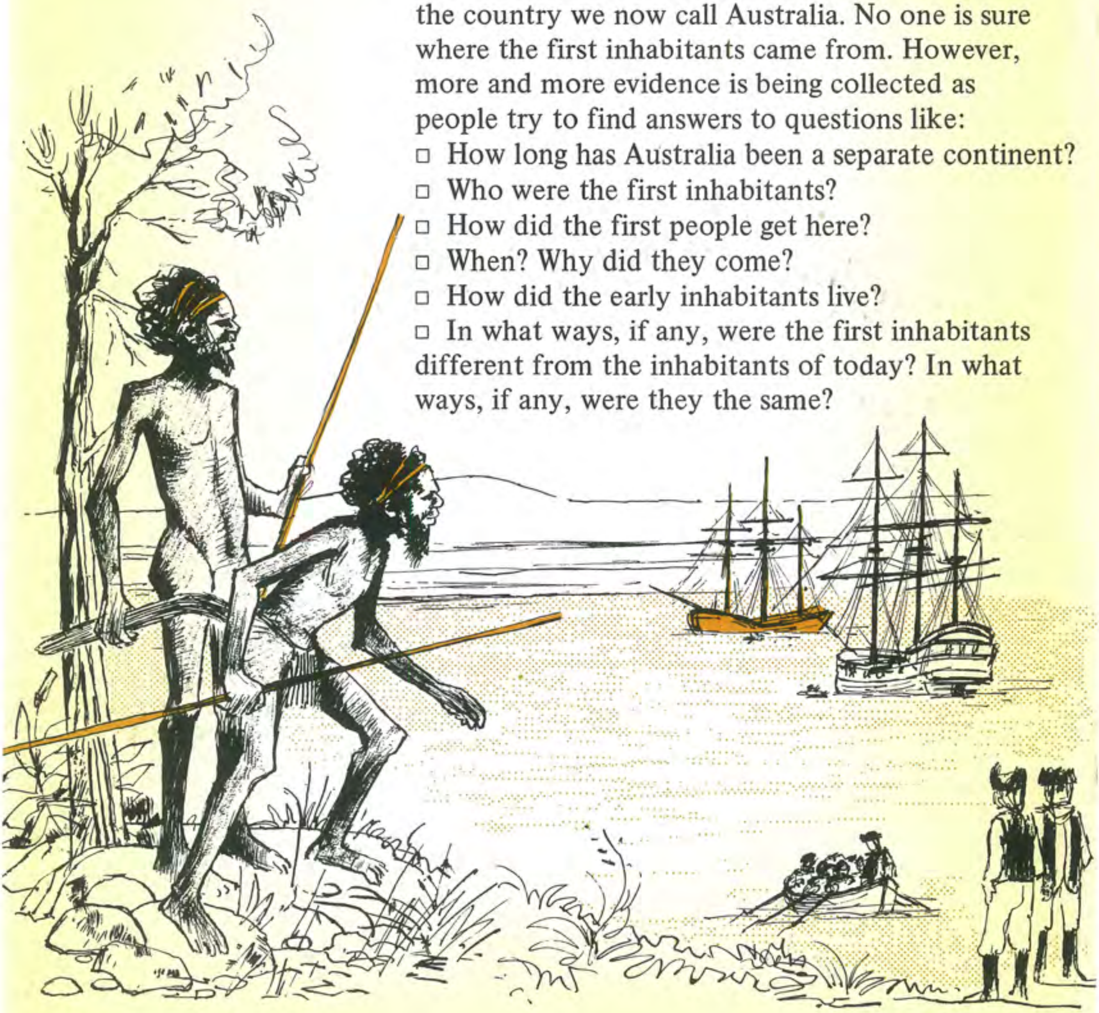
asep

AUSTRALIAN SCIENCE EDUCATION PROJECT

The Original Australians and You

No one knows how long humans have lived in the country we now call Australia. No one is sure where the first inhabitants came from. However, more and more evidence is being collected as people try to find answers to questions like:

☐ How long has Australia been a separate continent?
☐ Who were the first inhabitants?
☐ How did the first people get here?
☐ When? Why did they come?
☐ How did the early inhabitants live?
☐ In what ways, if any, were the first inhabitants different from the inhabitants of today? In what ways, if any, were they the same?



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Most people have difficulty in understanding the changes which are occurring so rapidly in Australia today. It is much more difficult to try to understand about changes which might have occurred in the past.

As far as people are concerned, it is often hard to try to describe a typical, present-day Australian. (Many people claim it is impossible.)

It is more difficult to try to work out what the first Australians were like and how they lived.

We know that it is only about 200 years since Europeans arrived here and settled—and that when they came the Aborigines were the only other humans living in the country.

The Aborigines whom the Europeans met were hunters and gatherers. No evidence was found of their having planted crops or of their having domesticated animals, other than the dingo.

Nevertheless evidence collected by the European settlers, together with evidence obtained from present-day Aborigines and scientists, helps us to work out many things about the past.

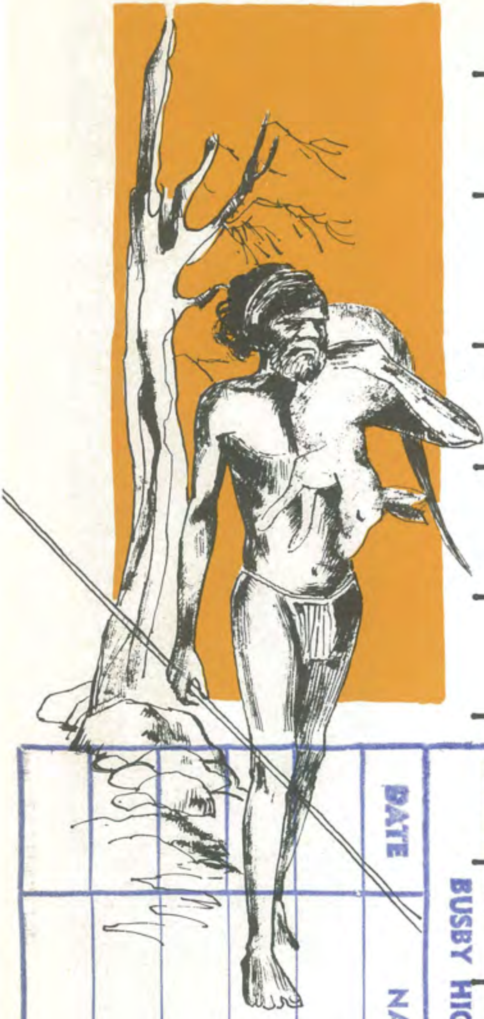
In *Australians—Past and Present,* the 'past' refers to people who lived here before European settlement and the 'present' refers to the many, varied groups of people who inhabit Australia today.

The lists on pages 4 and 5 are an attempt to summarize some of the similarities and differences between past and present Australians. As you proceed with your investigations, return to the lists now and again and try to decide:

☐ which parts need modifying,
☐ what other things should be included, and
☐ what problems could arise as a result of a person changing from one life style to another.

This book is part of the learning material developed by the Australian Science Education Project (ASEP). The Project was funded by the Commonwealth and State Governments of Australia.

AUSTRALIANS–PAST



☐ Sun ☐ Fire ☐ Food

☐ Very little
–made from naturally occurring material

☐ Spoken language
☐ Sign language

☐ Small number–made by individuals from naturally occurring materials, e.g. stone, wood, bone, shell; and all easy to carry

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☐ Paintings and engravings
☐ Body decoration
–influenced by religion

☐ Wild animals, e.g. kangaroos, emus, lizards, fish
☐ Naturally occurring plants, e.g. seeds, roots

☐ Bark ☐ Leaves ☐ Branches
–made into shelters and windbreaks

(Land), ☐ Legs–for walking
(Water) ☐ Canoes, logs, rafts and so on

☐ Various,
e.g. family groupings, such as hordes; and religious groupings, such as local descent groups

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☐ Singing ☐ Chanting
☐ Percussion instruments ☐ 'Didjeridu'
–as background for ceremonies, and for entertainment

☐ Totemism played an important part–explained their beginnings and governed their life-style

BUSBY HIGH SCHOOL
DATE
NAME
CLASS

AUSTRALIANS–PRESENT

ENERGY	☐ Sun ☐ Fossil fuels ☐ Electricity ☐ Nuclear fuels ☐ Food
CLOTHING	☐ Great variety–manufactured from natural materials, e.g. wool, cotton; and from synthetics, e.g. nylon, Terylene
COMMUNICATION	☐ Spoken language ☐ Printed word, e.g. newspapers, books ☐ Technological devices, e.g. telephone, radio, TV, satellites
TOOLS	☐ A vast array, from pins to computers–manufactured by many people in factories
VISUAL ART	☐ Many forms–mainly for relaxation and recreation
FOOD	☐ Domesticated animals, e.g. sheep, cattle ☐ Crops, e.g. wheat–highly modified, manufactured and packaged
SHELTER	☐ Timber ☐ Steel ☐ Concrete ☐ Plastic –made into closed shelters which are sometimes heated and cooled; and sometimes lit with artificial lighting
TRANSPORT	(Land) ☐ Legs–for walking ☐ Wheels (Water) ☐ Various boats (Air) ☐ Aircraft ☐ Rockets
GROUPINGS	☐ Various, e.g. family, religious, social
MUSIC	☐ Many forms–for personal and group enjoyment–as background for ceremonies
RELIGION	☐ Various forms–explain beginnings and can affect life-styles

PLAN

You can do either group of options first–
the ones here on page 6 or the ones on page 7.

METHODS FOR FINDING OUT ABOUT THE PAST

You should attempt all options detailed below. Options 1 and 2 can be done in either order. They should both be done before Option 3 is attempted.

OPTION 1: SITE INVESTIGATIONS
Page 8

You make your own archaeological site and investigate one made by others. You find out some of the problems of obtaining and interpreting buried remains.

OPTION 2: AUSTRALIAN ANTHROPOLOGY
Page 24

You, your parents or grandparents probably came from a country other than Australia. Look around at your fellow students. They, their parents or grandparents possibly came from different countries in other parts of the world.

Where did the Aborigines come from? Are Aborigines descended from one or many different nationalities?

In this option you learn about some methods used to try to find answers to questions like these.

OPTION 3: PUZZLES AND SIGNPOSTS
Page 36

Evidence from archaeological and anthropological investigations is presented. This evidence is confusing–like a jigsaw with bits missing. You try to put together some of the evidence and interpret it.

DISCUSSION
Page 108.

To make the most of *Australians–Past and Present,* you will need to refer to many reference books. Teachers have been given suitable lists. You will probably be able to find other useful books.

THE WAYS OF LIFE OF AUSTRALIANS PAST AND PRESENT

To obtain a better understanding of the Aboriginal way of life, you should try to work through all of the options detailed below. You can do them in any order.

The booklet, 'The Kaurna People of the Adelaide Plains', describes the way of life of one group of Aboriginal people. It is useful background reading for all these options.

OPTION 4:
MAKING A LIVING
Page 48

Food, water, shelter and many other things can be obtained from the environment. In this option you compare the use made of the environment by past and present Australians.

OPTION 5:
GROUPINGS AND PATTERNS OF BEHAVIOUR
Page 62

Family, social, religious and other groupings form part of everyday life for most people. This option is an introduction to the life style of the Aborigines.

OPTION 7:
TECHNOLOGY
Page 92

You make fire and tools, using the methods used by past Australians.

OPTION 6:
COMMUNICATIONS AND THE ARTS
Page 76

For present Australians, art galleries, museums, theatres, etc., cater for many different forms of the arts. This option introduces you to the arts used by Aborigines. You can make your own painting materials.

In *Australians–Past and Present,* present-day Aborigines are included as part of Australians–present. Along with many migrant groups, the present Aborigines contribute different cultures to the 'Australian way of life'. You discuss the effects of mixing different cultures.

Whenever you see the sign ✍ followed by a number it means there is something to do in your record book.

You can check your answers to some of the questions asked by turning to pages 109 and 110.

OPTION
1

A study of the remains of past civilizations can help present-day man learn much about the past. The science of archaeology involves the discovery and excavation of areas (sites) containing such remains. Two things archaeologists try to find are the age of remains and evidence of how people lived at that time, in that place. This option is an introduction to some archaeological methods and to how they may be used to find more information about the earliest Australians.

Site Investigations

ACTIVITY 1: DISCOVERING A SITE

An ancient shell mound (midden), Brighton, Victoria.

An archaeologist looking for information about the pre-history of an area first looks for remains on the surface of the ground.

In some parts of the world, archaeologists use the discovery of old burial sites, or old building sites, or old coins, or artefacts (man-made objects) as starting points for further investigations.

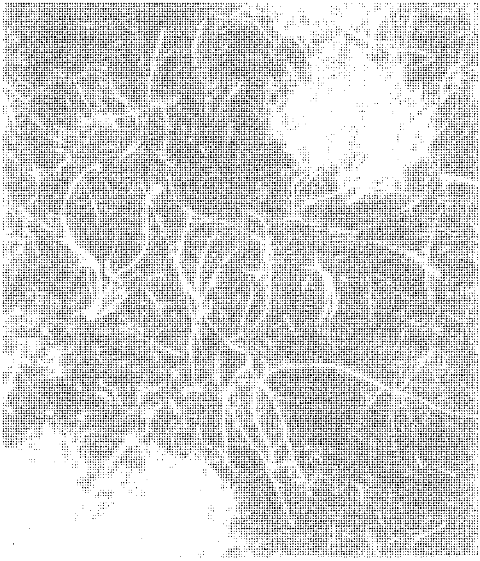
In Australia, in addition to human remains and artefacts an archaeologist may find such things as animal and food remains.

Examples of food remains are the huge shell mounds common throughout the continent.

Aboriginal artefacts may include such things as stone axe heads, spear points and grinding stones.

PATTERNS

Look at these two photos of something which is commonly found in homes.



A close-up photo.

A longer distance photo.

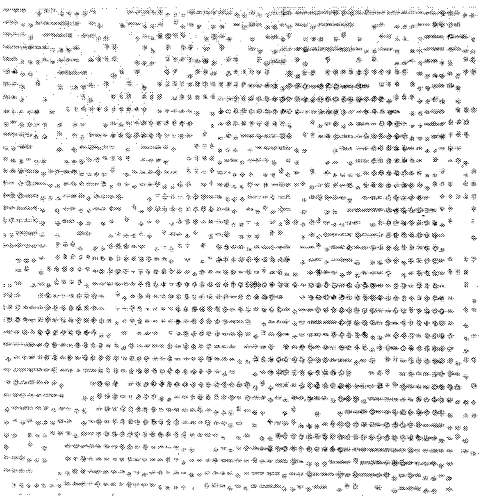
1.1 Try to find out what the object is. Perhaps other opinions may be helpful. There is space on page 3 of your record book for you to record these opinions.

Sometimes patterns act as clues. As you saw in the photos, patterns are often more obvious from a distance. Ground patterns seen from the air can sometimes help archaeologists discover sites. For example, an area where decomposable substances have been buried would probably have a soil composition different from that of its surroundings. A correspondingly different growth rate of crops in the area could show up as a pattern to observers in an aircraft. This situation could occur in an area above the site of an old burial ground.

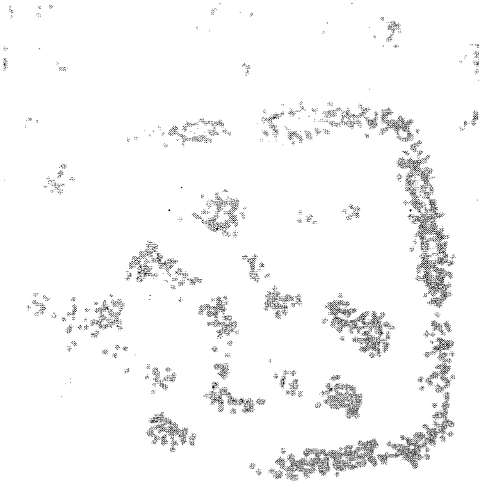
Activity 1 continued next page

BURIAL REMAINS

From this . . .



To this . . .



(Photos by I. Schollar.)

Complex apparatus has been developed to help archaeologists survey areas and locate burial remains.

One such piece of apparatus is the proton magnetometer. This is a very sensitive instrument which measures changes in the magnetic properties of the soil. Buried remains need not be made of iron to cause these changes—this instrument can even tell the difference between glazed and unglazed pottery.

Measurements taken over a site with a proton magnetometer may give a picture like that shown top left. Can you detect a pattern in it?

As with many sensitive instruments, useless background signals (noise) are also picked up by proton magnetometers. Surface effects and natural magnetic variations can obscure what the archaeologist is looking for. The picture top left is full of background signals.

However, measurements taken over a site with a proton magnetometer can be fed through a correctly programmed computer to eliminate this background.

Here, bottom left, is the picture again—without the background. Can you pick out this pattern from the background in the top photo?

The proton magnetometer is best used for the detection of the remains of settlements, huts, pottery, etc.—and, as these did not exist in Australia before European settlement, it has not been used here yet.

Most site discoveries in Australia are made without the help of such instruments. Many are the result of accidental findings.

ACTIVITY 2: MAKING A 'SITE'

Once a site has been discovered, archaeologists have to work out the best method of excavating it, that is, the method that will cause least damage to whatever is within the site. To give you some idea of what is involved, you can make an artificial site, and excavate one.

This can be done as a group effort.

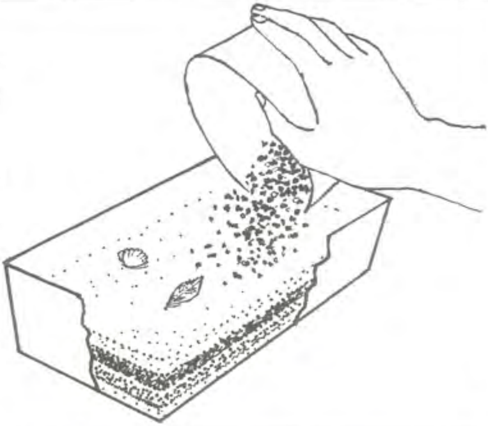
You will need:

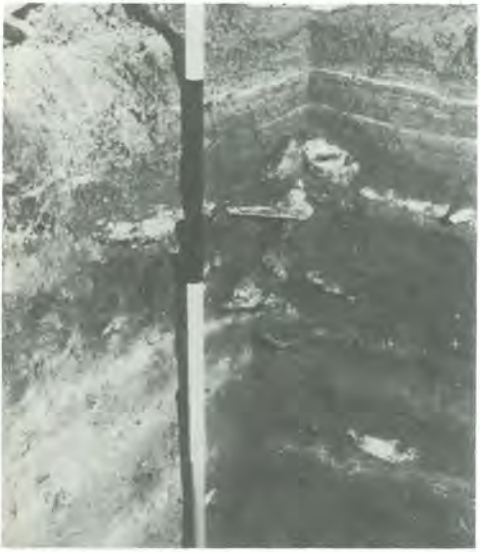
- materials such as clay, sand, gravel, plaster of Paris, ashes, etc. to make layers for the site
- pieces of bone, shells, leaves and other small objects to place in different layers of the site–be sure to include some fragile things
- 1 container–a cardboard box would do.

Build up several layers in the container. They can be in any order. Include at least one cemented layer containing plaster of Paris.

As you are building, place at least one object in each layer.

1.2 Record the position of each object placed in the 'site'.





Which is the oldest artefact in these strata?
(Photo by courtesy of Dr D. Merrilees, The Western Australian Museum.)

1.3 Where in the site is the object that has been buried for

(a) the longest time?

(b) the shortest time?

A natural site usually consists of layers of sediments. These layers are called strata. Usually, objects found in lower strata are older than objects found in higher strata. This does not mean that archaeologists can tell exactly how old each find is. It simply means that they can say that a find from a lower layer is probably older than a find from a higher layer. They are determining the **relative ages** of the finds–not the actual ages.

ACTIVITY 3: EXCAVATING A 'SITE'

Sometimes archaeologists have no idea what is under the ground when they begin excavating. To get the feel of working this way, exchange your site with one made by another group.

You will need:

- equipment to dig into the layers of a site, e.g.
  a stainless steel spoon,
  a brush,
  a small hammer, or
  a screwdriver.

Excavate the top layer first and arrange the finds in the correct order and positioning of each object on the site.

1.4 Record your finds. When you have finished, check with the makers of the site to see if you excavated your finds in the correct order. Also note any difficulties that arise during the excavation.

INFORMATION FROM A SITE

Most areas in Australia where material of archaeological interest has been found (or is suspected) are protected by law. It is illegal to enter some of these areas without a permit and certainly illegal to dig and remove anything.

People with no initial interest in archaeology often discover sites by accident.

It is unlikely that you will ever discover human remains accidentally, but if you do, you are required by law to report the find to the police.

The excerpt on the opposite page is from *The Advocate*, Burnie, Tasmania, 22 May 1967. It shows how the immediate reporting of a possible site by some amateurs has helped archaeologists.

Expert
claims

Cave inhabited about 8000 years ago

The cave was examined by Mr. Rhys Jones, senior tutor in anthropology at the University of Sydney. He said the cave was dwelt in more than 8000 years ago.

Mr. Jones said that from what had already been assessed, the cave was perhaps the best find yet in the discovery of the aborigines' way of life before the white man came to Tasmania.

"The most important fact of the discovery is that the cave has been undisturbed and we can reconstruct, through plans and photographs, the cave as it was," Mr. Jones said.

The most exciting find has been a pebble and flat rock implement, used as a pounder and anvil, which was found in a narrow fissure at the rear of the cave.

Mr. Jones believes the implement was used to pound or soften vegetable foods such as nuts, kelp or roots.

Other finds in the cave have included bones of a southern elephant seal, a wallaby, and other seals, marsupials and birds, the jaw of a parrot fish and flakes and core tools of quartzite and a hard-grained black material.

The cave was discovered during the Christmas holidays by four children—Joanne and Dooley Burke and Theresa and Seamus Campbell.

Seamus, his feet held by his sister, crawled six feet into a low tunnel and saw that it opened out into a large cavern.

He crawled out and immediately told his father, who, after inspecting the cave from the tunnel with a flashlight, reported the find to Mr. Charles Turner, the president of the Burnie Field Naturalists' Club.

The find was reported to experts at the Launceston and Hobart museums.

Messrs. Turner, Campbell and Burke returned to the cave, checked it inside, and sealed up its entrance with rock.

Undisturbed

"The surface area of the cave is 'living ground', that is to say, the ground has not been disturbed for hundreds of years," Mr Jones said yesterday.

"We can find from the shells, bones and charcoal what the aborigines' diet was, what they used for wood, and what kind of animals they killed," he said.

"We intend to survey the surrounding area, to carry out carbon-dating of some of our finds, and I know we shall find implements.

"So far, the discovery that the cave was dwelt in about 8000 years ago has given us an idea of when the aborigines moved from the Bass Strait area to higher land when the strait sank.

"This was about the time of the closing stages of the ice age," Mr. Jones said.

"The surface is covered with shell and bone, and it is easy to see how the chamber inside the main cave became sealed off from the rest of the cave.

"We think that what happened was the aborigines slowly built up the floor of the chamber with waste food, like shells, bones and charcoal.

"After years of this, the area within the cave became smaller, and the aborigines moved into the larger cave and slowly the entrance was completely blocked.

"This is why the cave is in such an undisturbed state. Everything is practically the same as it was thousands of years ago," he said.

"We have discovered that the main cave was inhabited up to 300 years ago, but we still have much work to do.

"The carbon-dating of the shells, bones and other objects we discover will take some time, but we are sure that we can get all the information needed.

Middens

"The middens (piles of shells and bones usually found near the aborigines' cooking area) are our main source of information at the moment.

"If we dig into the layers of shell and bones, we can find out when they were put there.

"It is most important that we keep everything undisturbed," he said.

In the past it had been most difficult to use the surface of caves because people had often visited the areas and disturbed and mixed up the surface.

ACTIVITY 4: PROBLEMS AT SITES

Drastic excavation. Preliminary work at Talgai skull site, Queensland.
(Photo by courtesy of N.W.G. Macintosh.)

WHEN BITS ARE MISSING

Look at a set of What Is It? sheets.

What can you see using one sheet only?

Place a second sheet on top. What can you see now?

Can you get a picture if you use the set of four sheets? You may have to rotate the sheets through several positions.

Could you have told what the picture was if any sheets had been missing?

If a number of people remove objects from a site over a number of years, it is almost impossible for an archaeologist to 'get the picture'.

It is important that an area where human remains or artefacts are found is not tampered with before experts have a chance to investigate it.

The Tasmanian site (see newspaper excerpt on page 13) was undisturbed. As a result, scientists can hope to find much valuable information about the past.

WHEN ARCHAEOLOGISTS HAVE TO HURRY

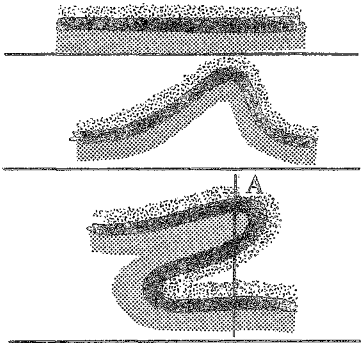
The fact that no one is waiting to use the Tasmanian site for something such as farming or mining is also a great help to the archaeologists working there.

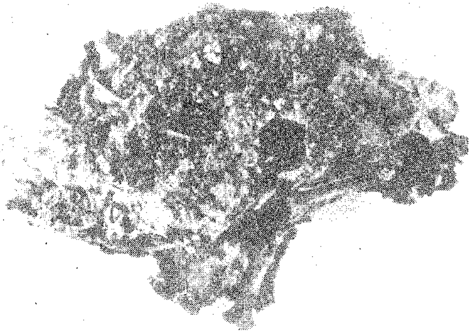
When a site is in no danger of immediate destruction, excavation can proceed with great care.

Quicker and far less satisfactory methods must be used if a site is endangered. When archaeologists have to work this way, important links may be missed or destroyed.

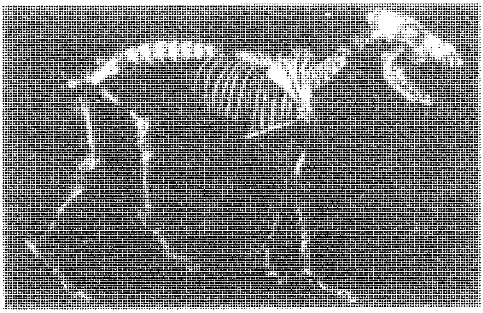
WHEN LAYERS HAVE BEEN DISTURBED

1.5 Sometimes strata become folded. What mistake could an archaeologist make if he were to dig down at point A in the diagram below?





Above: *Paraffin soaked matrix† containing dingo skeleton from Fromm's Landing, South Australia.*
Below: *Reconstructed dingo skeleton.*



(Photos by N.W.G. Macintosh, taken from 'Australian Archaeology: A Guide to Field Techniques' published by the Australian Institute of Aboriginal Studies.)

WHEN BITS HAVE TO BE PACKED FOR TRANSPORT

Much of the sorting and subsequent identification of finds needs specialized skills and equipment. This often means that remains have to be packed and transported back to a home base.

The Green Gully Burial Site, Keilor, Victoria (see page 18) is one that has been studied extensively. When bones had to be transported away from it for further study, a method of strengthening the bones for safe travelling was decided on. It apparently seemed the best method at the time. But the osteologist* who had to remove the strengthening material had problems.

The photo at left is a photo of a block of matrix totally enclosing the skeleton of a dingo 3000 years old. This block had to be transported from its site for further study. At the site, paraffin was applied to the block. According to N.W.G. Macintosh, Professor of Anatomy, University of Sydney, the block should have been transported much as it was, without the paraffin. He said, 'The paraffin penetrated the sand and formed a soft cement. . . . the paraffin cement had to be dissected from the bones individually, converting a work task of two to three days into a labour of some three months. Bones that have survived for centuries in their matrix whatever it may be . . . will continue to survive best in that same matrix.'

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† The word 'matrix' is used to describe the material in which the bones are embedded.

* A person who studies bones is called an osteologist.

FINDING THE ACTUAL AGES

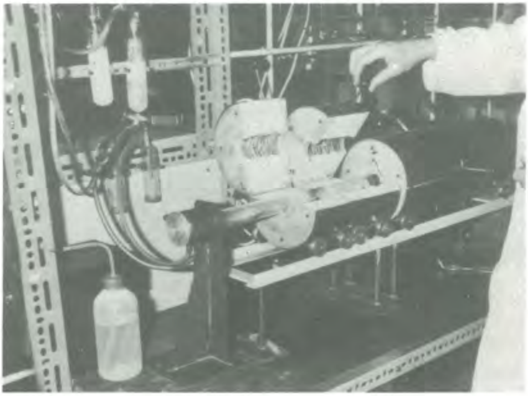
In Activity 2 you saw that the position of finds in strata can only indicate relative ages.

One way to estimate actual ages is by radio-carbon dating.

In the late 1940s Professor W. Libby, an American, suggested that a radio-active form of carbon should exist in nature. He found that it did, and that it provided a method for determining the ages of some archaeological finds.

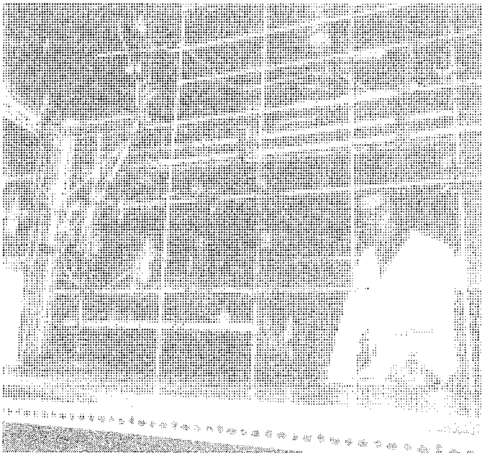
The process of radio-carbon dating is very involved and expensive. There is also some inaccuracy when the age is determined this way.

1 *A charcoal sample is sorted ready for radio-active carbon dating.*

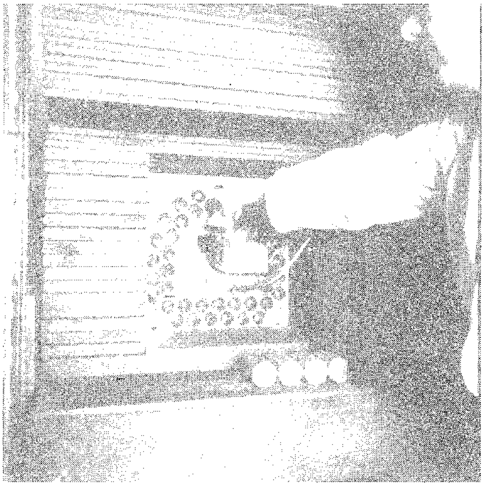


2 *The sample is burnt with oxygen in a heated quartz tube.*

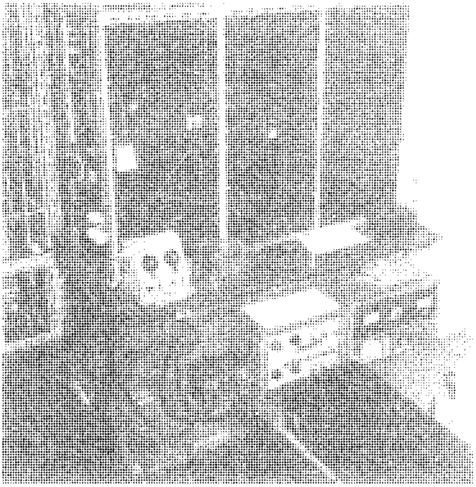
3 *Carbon dioxide gas from the burning process is purified in glass 'plumbing'.*



4 *Some of the 'plumbing'.*



5 *Double rings of Geiger counters detect radio-activity from the sample gas.*

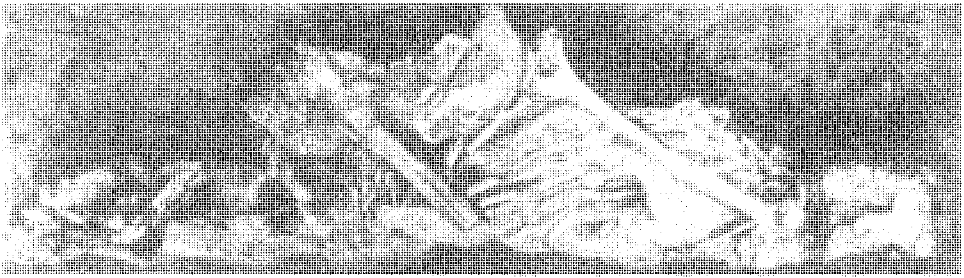


6 *Electronic equipment records the activity of the gas sample. From this activity the actual age of the sample can be estimated.*

(Photos on these two pages by courtesy of Miss A. Bermingham, Science Museum of Victoria.)

The following is part of a much more comprehensive report of investigations which followed the accidental discovery of human remains near Keilor in Victoria.

GREEN GULLY BURIAL–AS EXCAVATED



View from above.

View from side.

(Photos above and excerpts on pages 19–23 are from 'Memoirs of the National Museum of Victoria'. Number 30. Ian Potter Foundation Volume. By courtesy of the National Museum of Victoria.)

Note: **10 m** second line
second paragraph page 19
stands for 10 miles.

EXCAVATION OF THE GREEN GULLY BURIAL

By D. A. CASEY
Honorary Associate in Anthropology
and T. A. DARRAGH
Curator of Fossils

Abstract

The discovery and excavation of human remains found in an ancient river terrace of the Maribyrnong R. near Keilor, Victoria, are described. The remains were in a shallow grave sealed by three feet of undisturbed soil. Radiocarbon analysis indicates that the bones are about 6460 years old.

Introduction

In August 1965 fossil human bones were found in a pit (from which garden soil is excavated for sale) near Keilor, about 10 m NW. of Melbourne. The pit is on a farm property belonging to Mr H. Dodds on the right bank of the Maribyrnong R. about one mile S. of the township of Keilor. It is immediately downstream from the point where Taylor Ck, which flows down Green Gully, joins the river (Lat. 37° 44′S., long. 144° 50′E. Military Map 1 in. = 1 mile, Sunbury Sheet 871464).

The site had been visited previously on several occasions by Mr E. D. Gill, Assistant Director of the National Museum of Victoria, and he had asked the proprietor of the pit, Mr Donald Mahon, to let him know of any fossil bones or stone implements found during excavation. When the bones were first noticed, Mr Mahon, realizing that they were probably of interest and importance, left them undisturbed and notified the Museum of their discovery. The site was immediately visited by Mr T. A. Darragh, Curator of Fossils at the Museum.

Occurrence

The soil pit was about nine feet deep where the bones were found, and they were visible in position in the more or less vertical face of the pit, at a depth of about 3 ft 6 in. from the surface. The present surface of the ground is here the original natural surface, and it has not been disturbed by the removal of soil. The bones appeared to be lying on a slightly concave surface. A cranium could be seen on the right-hand side as viewed in the face of the pit, and other bones extended to the left. The whole covered about three feet laterally. Apart from the cranium, the various bones visible could not be clearly identified. Some had been disturbed and broken away when they were uncovered by the front-end loader used for excavating the soil. Some of the dislodged bones and fragments were recovered from the loose earth at the foot of the face, and amongst these there was a fragment of a frontal bone with part of the margin of one orbit and part of the supra-orbital ridge, and this was clearly human. Other fragments, and two teeth, were recovered later, but no doubt some were lost in soil removed from the pit. It was assumed that the bones were the remains of a human skeleton.

There was evidence of some disturbance of the soil immediately above the bones, but apart from this there was no sign of a grave. An examination of the soil face showed that the bones were covered by about three feet of apparently undisturbed soil and alluvial sediment.

Excavation of the Bones

The excavation was carried out by digging down from the surface of the terrace. There was no apparent stratification of the soil, and it was removed in horizontal spits, each of a few inches in depth. The excavation showed that the bones were indeed human, and confirmed the fact that there was at least three feet of quite undisturbed soil and sediment above them, and that there was no deep grave. The bones were clearly not an insertion into the terrace and were truly fossil. However, as the soil was removed from immediately above and around the bones, it became clear that they were resting in a shallow grave, and the outline of this could be seen in plan, marked by a zone of darker soil. This was most clearly seen around the NE. end of the grave. Much of the filling of the grave at this end had a considerable mixture of burnt earth of a pink colour, and was consequently lighter in tone than the adjacent earth. The limits of the grave were not so well marked at the other end, but its existence here was clearly indicated by the fact that the soil around the bones was very much darker than the adjacent terrace material. The zone of dark soil around the bones was quite clear, although its limits were nowhere sharply or precisely marked (Fig. 2). These facts would seem to indicate that it was a grave dug into comparatively loose soil and filled in shortly afterwards, and that it was not merely a natural hollow. If a natural hollow had been utilized as a grave, it might be expected that the junction between the undisturbed sides of the hollow and the grave filling would have been distinct and precisely noticeable.

The surviving part of the grave extended back about nine or ten inches from the face of the cut as left by the front-end loader. Vertically, the grave extended upwards for about twelve inches from the lowest point of the surface upon which the bones lay (Fig. 3). On the face of the cut, above the NE. end of the burial, there was visible a tip of burnt earth oxidized to a pinkish orange colour, which had not been burnt *in situ*. It sloped down in such a way as to suggest that it had been tipped down, or had fallen down over the bones. Excavation revealed that this inference was correct. The burnt material sloped down from a point above and beyond the cranium, and spread out so as to cover the whole of the cranium and thorax. It passed over the cranium but was not around the sides of it. It must be supposed that the bones were deliberately and intentionally buried.

The remains were lying on their left side, with the knees drawn up. The burial

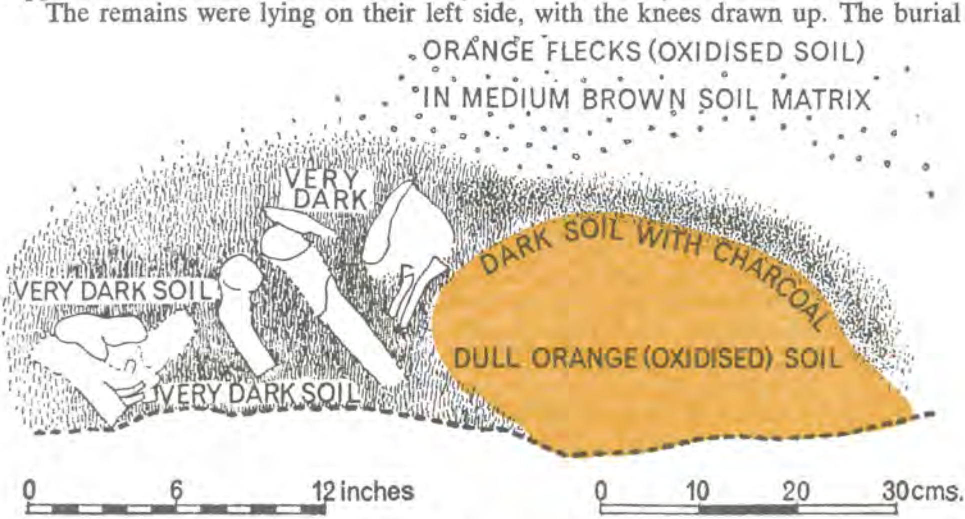

ORANGE FLECKS (OXIDISED SOIL)
IN MEDIUM BROWN SOIL MATRIX
VERY DARK
DARK SOIL WITH CHARCOAL
VERY DARK SOIL
DULL ORANGE (OXIDISED) SOIL
VERY DARK SOIL
0
6
12 inches
0
10
20
30cms.

FIG. 2—Plan of the burial, partly excavated, showing outline of grave.

was oriented in about a NE.-SW. direction, with the skull towards the NE. The skull end of the burial was lying several inches lower than the feet end. The facial bones had been broken away and damaged when uncovered by the front-end loader, as had also the knee joints and the adjacent parts of the long bones of the legs. (Pl. 1 and Fig. 4). The bones of the feet, legs, and the pelvic region were darker in colour and were in a more fragile condition than those of the thorax, arms, and cranium, presumably because of a difference in the filling of the two parts of the grave. None of the bones could have been lifted without some danger of being damaged and they were all either fragile or considerably fractured.

As the earth was gradually removed from around and about the bones, each bone as it was revealed was painted with a strengthening solution (a dilute solution of Bedacryl in acetone). No attempt was made to remove the bones separately, but it was decided to lift them as they lay, in three blocks: the cranium, the thorax, arms and pelvic region, and the feet, so that they could be carefully and deliberately examined in the laboratory. When the bones had been strengthened as far as was practicable with the Bedacryl solution, each block was covered with several layers of paper, pasted on in small pieces, to protect the bones from the plaster to be used for reinforcement. Each block was then reinforced with plaster of Paris bandages, and after undercutting was lifted and removed.

It is of course not possible to know how far the grave extended on the side that was removed by the front-end loader, and the possibility that the burial might have been inserted from this side, down a sloping grave shaft, has to be considered, but is remote. The grave as revealed by the excavation was shallow, and was open at the top, and the inner side and lip were clearly, if not precisely, defined. There was no sign of undercutting. As well as this, the filling at the skull end, as previously described, had evidently been tipped down from above. These facts would preclude the possibility of the burial having been made through a lateral sloping shaft.

In recent times the natural surface of the ground sloped down, from about the vicinity of the burial site, towards the river for a short distance. This slope apparently represented the margin of the terrace. This part of the terrace no longer exists, having been removed in the process of digging out the soil from the pit. Nevertheless the position and extent of the recent sloping surface and its angle of slope are known fairly accurately. From a plan and a series of levels which were made for the owner of the land prior to the development of the site as a soil pit, it has been possible to deduce the approximate contours of the recent surface. The direction of its slope was towards the E., i.e. towards the river, and its maximum gradient was only about eight degrees. Moreover, according to Mr Mahon, there was no large hole or irregularity in the surface hereabouts, and it was a gentle unbroken slope. This is confirmed also by air photos of the site taken before the soil pit was started. The maximum probable slope of the surface is marked on the drawing of the vertical section of the site by a dotted line (Fig. 3A). It will be seen that it is extremely unlikely that a grave shaft could have extended down from anywhere near this surface. The distance is too great.

A grave shaft could conceivably have reached down to the position of the burial at some earlier time, when the surface of the ground here was considerably lower, perhaps when it was some two feet lower. However, if it were necessary to doubt the validity of the evidence in regard to the grave provided by the excavation and to consider this further possibility, the burial would still, in this hypothetical case have to be considered as ancient and not recent, as it would have been sealed by the upper two feet of the terrace sediments.

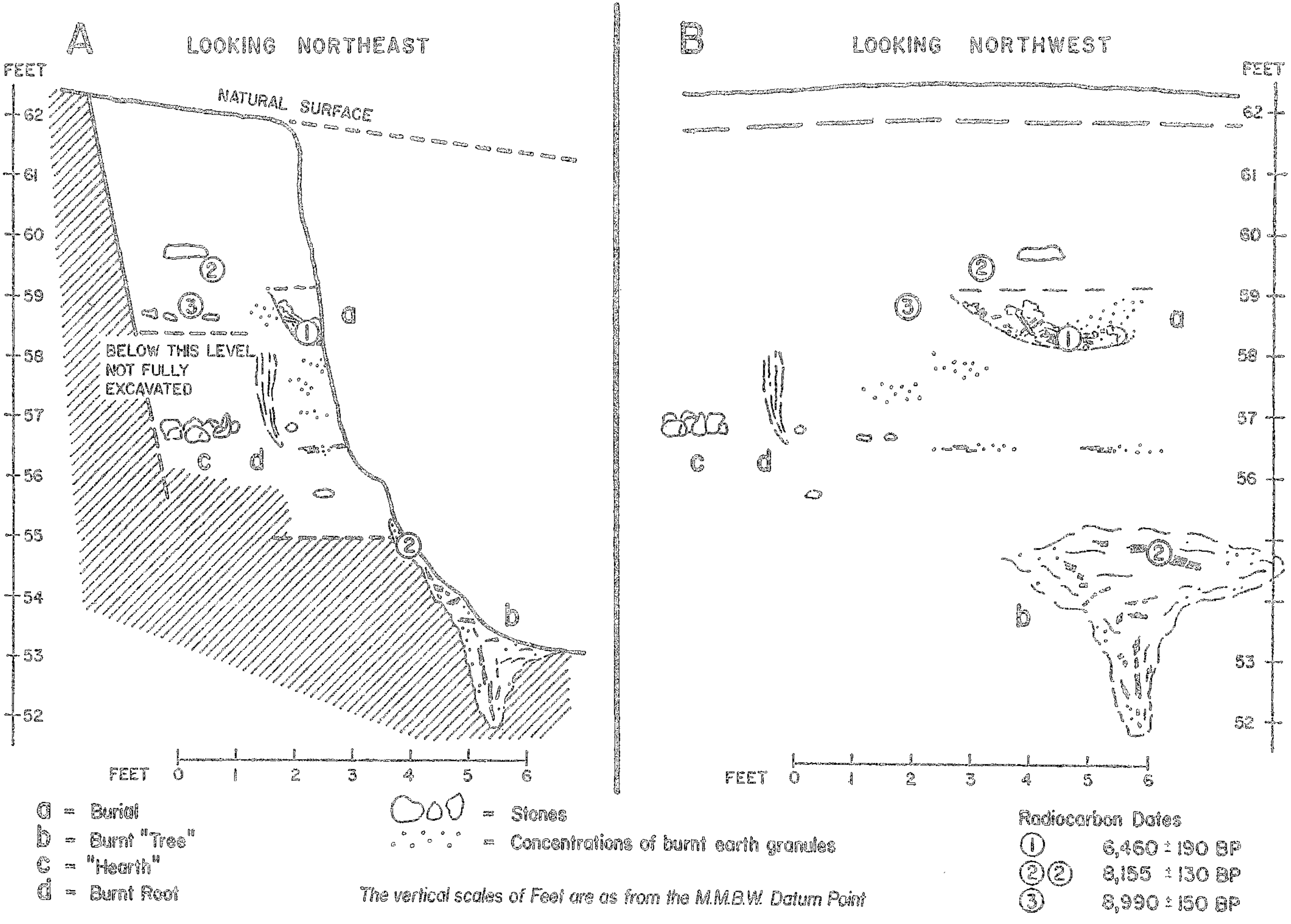


FIG. 3 A, B—Vertical sections of burial site. Objects in these drawings are shown as if projected on vertical planes at right angles to each other. The relative spatial positions of the objects may thus be seen by comparing the two drawings.

Burnt Tree, and other Signs of Burning

After the removal of the bones, the excavation was continued downwards in order to examine the large mass of burnt material, and to determine whether this had any connection with the burial. The burnt earth, ash, and charcoal proved to extend down at one place to R.L. 51 ft 9 in., i.e., it extended vertically for 3 ft 6 in. overall. The lower two feet included burnt-out roots in position of growth. They were confined within a fairly narrow vertically tapering space, and in this there were many large pieces of charcoal, all positioned with the grain of the wood more or less vertical (Fig. 3). The main mass of burnt material was immediately above this, and had a depth of about 1 ft 6 in. There were in this many very large pieces of charcoal arranged irregularly. The whole mass was presumably the remains of the roots, and perhaps the fallen branches of a burnt tree. It was evident that the whole had been burnt *in situ* as the soil immediately adjacent to the burnt material was burnt, and oxidized to a pink or red colour. Unfortunately much of the upper part of the burnt material had been removed in the process of taking soil from the pit, and what remained was only a few inches thick. It was not possible to determine just where the surface of the ground had been upon which the tree had grown, but it could not have been higher than the upper limit of the burnt material, and it could hardly have been much lower than this.

Radiocarbon Age Estimations

The age of the burial has been determined from a sample of bone collagen:
N.Z., 6460 ± 190 B.P.*(Fig. 3, 1).
Estimations of age have also been made from samples of charcoal found in the vicinity of the grave:
V-63, 8155 ± 130 B.P. (Fig. 3, 2). Redistributed charcoal (not burnt *in situ*) from about 3·5 in. above the top of the grave, R.L. 59 ft 4 in., and about 1 ft 9 in. W. of the foot of it.
V-65, 8155 ± 130 B.P. (Fig. 3, 2). Charcoal collected from a large mass of wood burnt *in situ*, apparently tree roots, at R.L. 54 ft 9 in., about 4 ft 3 in. below the top of the grave and 2 ft E. of it.
V-64, 8990 ± 150 B.P. (Fig. 3, 3). Redistributed charcoal from about 4 in. below the top of the grave, R.L. 58 ft 9 in. and about 2 ft W. of it.
Sample V-64 was stratigraphically earlier than the grave, and indicates the age of the upper part of the deposit into which the grave was dug.
The identity of the dates of samples V-63 and V-65, although they were from positions 4 ft 9 in. apart vertically, confirms the supposition that the grave was on or adjacent to the sloping margin of the terrace. Presumably the tree from which sample V-65 came, grew upon this slope, and sample V-63 came from a position further up the same sloping surface. The date 8155 ± 130 B.P. is thus the date of the burning which took place on this sloping surface. That the burning was prior to the burial is confirmed by the fact that burnt earthy material was used in the filling of the grave.

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* The age of the sample is usually given as age (years) ± error (years before present). By international agreement, 'present' refers to the year A.D. 1950.

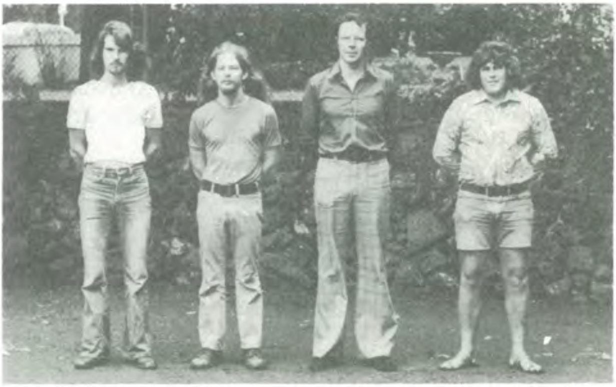
OPTION 2

One group of present Australians—the anthropologists—is trying to find answers to questions like: Who were the first people to live in Australia? How did they get here? Where did they come from? In this option you find out about some methods that anthropologists use.

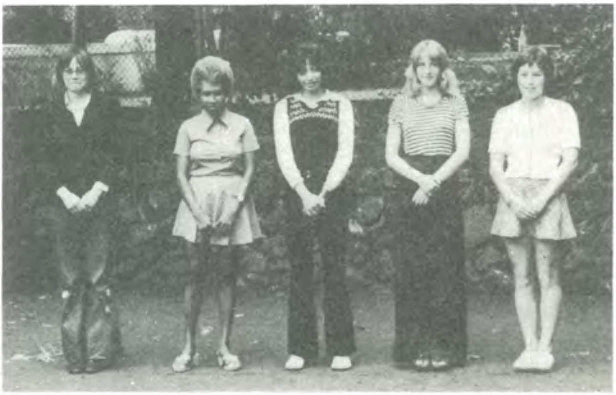
Australian Anthropology

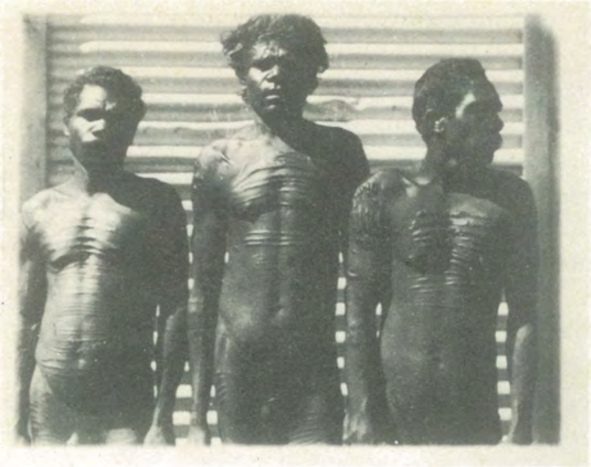
ACTIVITY 1: PHYSICAL CHARACTERISTICS

These people at right are from one country. Yet their physical appearances differ.



These people at right are from different countries. And their physical appearances differ.





(Photo by courtesy of the Australian Institute of Anatomy.)

From whom are these people descended?

Who were the ancestors of these Aborigines? Are their physical attributes due to

☐ natural differences that are found in people from one country (top photo on the opposite page), or

☐ to the fact that their ancestors come from different countries (bottom photo)?

This is the problem that confronts people trying to find out the origins of the Australian Aborigines.

All the photos on these pages are of Australians-present.

Activity 1 continued next page

As you would expect from the top photo on page 24, for people from a given country there is a spread of distribution in the measurements of a characteristic.

These measurements (data) from a large number of people (large sample) can be displayed as graphs.

Measurements give a better indication of the amount of spread if taken from as many people as possible.

The different standing heights of large samples of people from two different countries X and Y are shown on graphs at right.

Drawing the two distributions on the same graph allows easier comparison. See bottom graph.

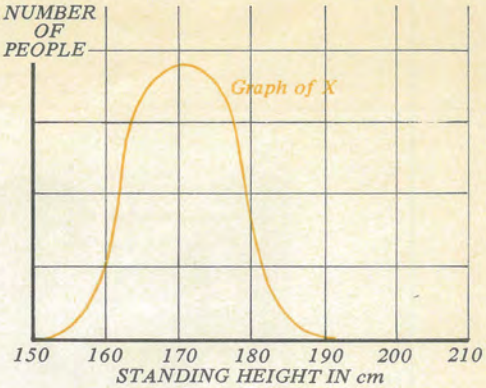
Points To Notice About the Graphs

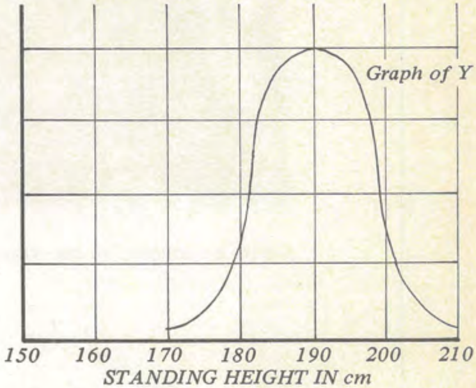
□ The height for each group is spread about a most common height. This most common height can be taken as typical for the people of that country.

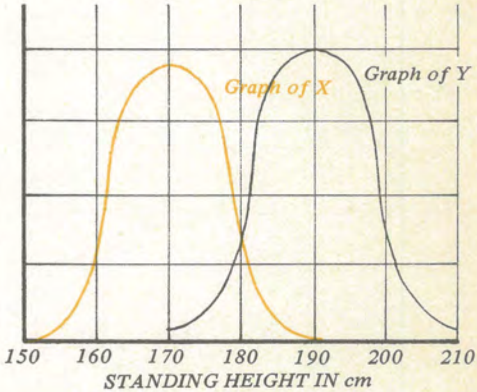
□ Overall, people from Y appear to be taller than people from X, but
□ some people from Y are smaller than some people from X.

2.1 What is the most common height for people from X?

2.2 What is the most common height for people from Y?







2.3 Over what height range are people from Y smaller than people from X?

2.4 What conclusions could an anthropologist make from this information?

ACTIVITY 2: MEASURING HEIGHTS

For the rest of this option you can look at some of the measurements anthropologists make—and the ways they put these measurements to work.

Most of the activities are best done with a partner. You will also need a tape-measure or ruler.

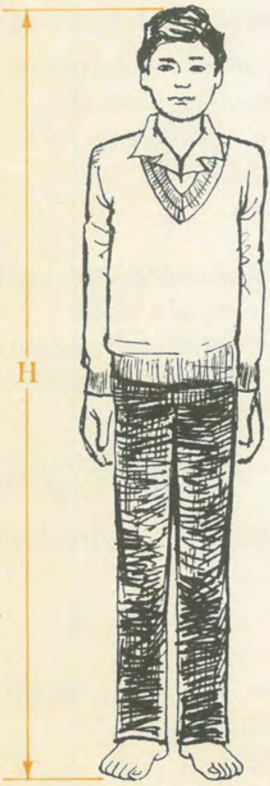
For this activity both you and your partner remove your shoes.

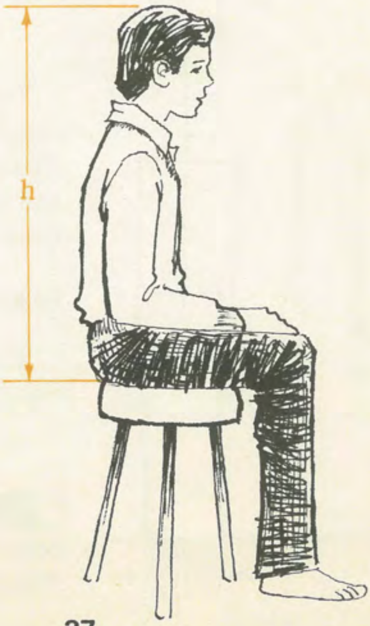
2.5 Measure each other's standing height (H)—see diagram below. Enter the results in your record book.

2.6 What do these measurements indicate about you and your partner?

2.7 Measure each other's sitting height (h)—and record the measurements.

2.8 Do the two sets of measurements—standing heights and sitting heights—tell more about you and your partner than each set on its own? Discuss and make a record of your decision.





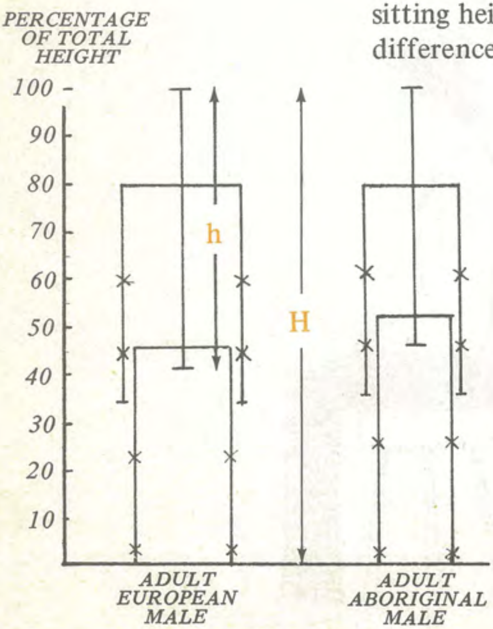
ACTIVITY 2: COMBINING MEASUREMENTS

Anthropologists have collected much physical data on people from different countries. The most frequently occurring measurements of each characteristic can be taken as representing a typical example of each group of people.

The stick figures below represent some body characteristics of typical adult European and Aboriginal males as a percentage of their total standing height.

The figure on the left of the diagram below shows, for example, that a typical adult European male's sitting height (h) is around 59 per cent of his standing height (H). Another way of interpreting the diagram is that the head and trunk of a typical adult European male make up around 59 per cent of his standing height. Discuss this with others if you have difficulty understanding it.

2.9 Record the above result for the typical adult European male. Also, enter the percentage of a typical adult Aboriginal male's sitting height to standing height. Note any difference.



(After A.A. Abbie)

Two physical characteristics can be combined and used as a single characteristic. For example, sitting and standing heights can be combined through the formula

$$\text{height index} = \frac{\text{sitting height (h)}}{\text{standing height (H)}}$$

The height index for a typical adult European male is

$$\frac{(h)}{(H)} = \frac{59}{100} = 0.59$$

2.10 What is the height index for a typical adult Aboriginal male?

Dr J.B. Birdsell measuring an Aboriginal woman at Mt Margaret, Western Australia, in 1939.

(Photo by Norman B. Tindale, from his book 'The Australian Aborigines'.)

If the height index were determined for a large sample of people from a given country, there would be a spread about a most frequent value–just the same as for a single characteristic. This most frequent value could be taken as typical of people from that country.

✍ 2.11 Calculate the height index for yourself and your partner. Note: You won't use percentages as in the example. You will use actual height measurements. Check with a teacher, if you are in doubt.

✍ 2.12 Compare your height indexes with those of the typical adult European and Aboriginal males. Does whether you are male or female affect the comparison? Would the fact that a student's body wouldn't be fully developed affect the comparison? You will probably find a discussion with others useful here before you make your report.

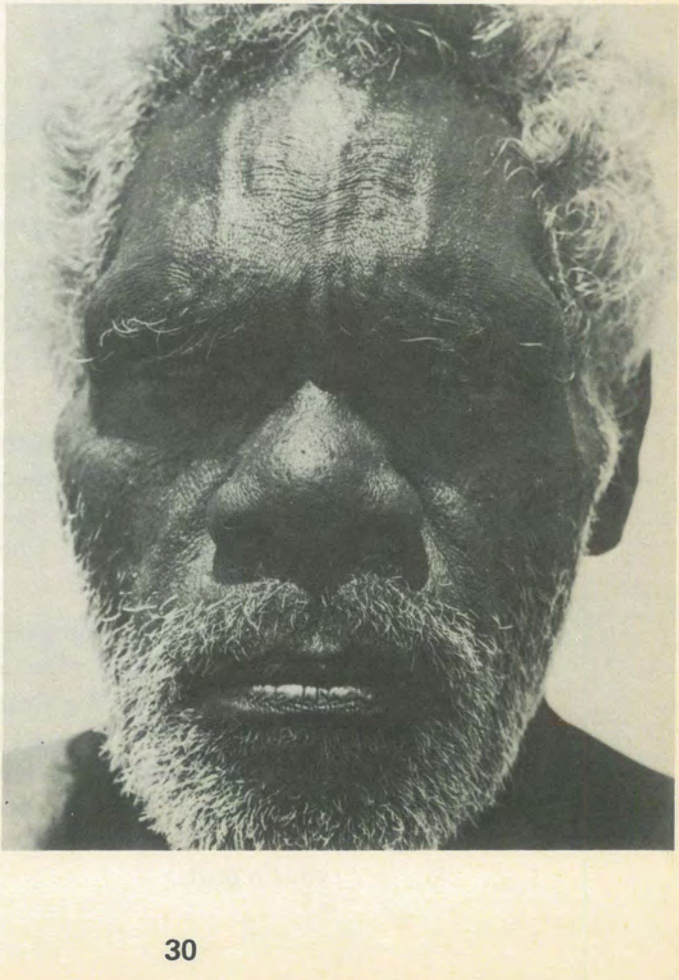
ACTIVITY 4: NOSE SHAPE

Anthropologists combine nose length and nose width into a nasal index. This is useful in making comparisons between peoples of different origin.

You and your partner could measure the width and length of each other's noses. You will need a tape measure or ruler again.

✍ 2.13 Enter these measurements in your record book and determine your nasal indexes from the formula

$$\text{nasal index} = \frac{\text{nose width (W)}}{\text{nose length (L)}}$$



Adult Aboriginal male, Groote Eylandt, Northern Territory.

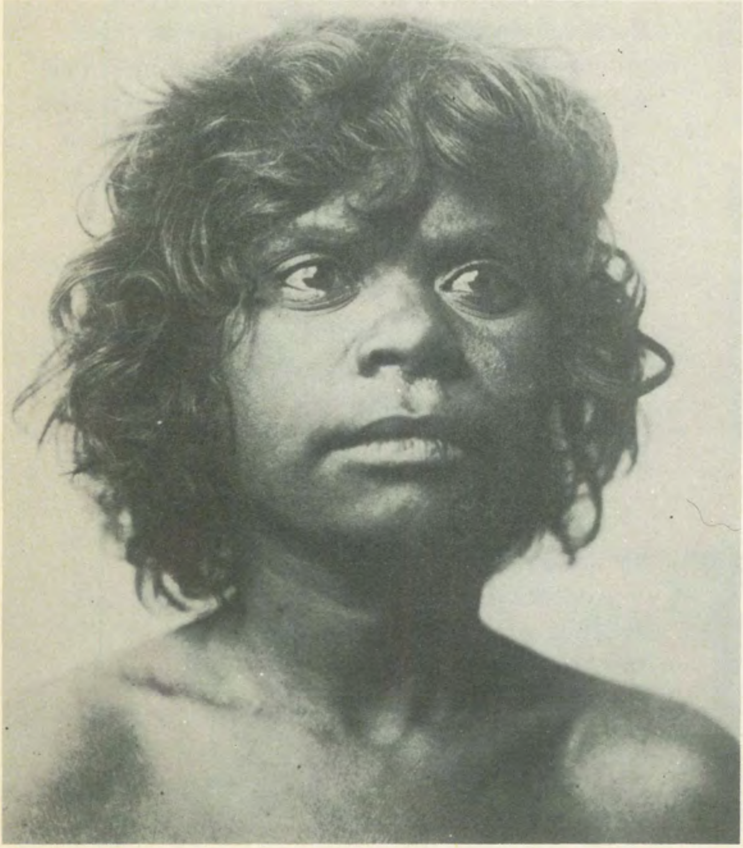
(Photo by Douglass Baglin, from 'The Dark Australians', by D. Baglin and D.R. Moore.)

Typical values for people of European origin are usually between 0.40 and 0.60.

2.14 Calculate the nasal index of the adult Aboriginal male and the young Aboriginal female in the photos.

The values you obtained should be about 1.00 or greater. This is a typical value for nasal index for Aborigines.

This value tells us that the typical Aboriginal has proportionately much wider nostrils than a typical European. You may like to discuss possible reasons for this.



Aboriginal girl, central Australia.
(Photo by J.W. Lindt. By courtesy of the National Museum of Victoria.)

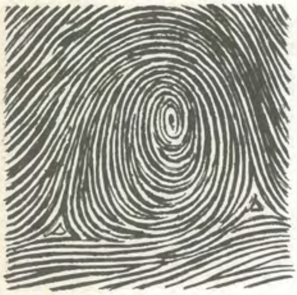
ACTIVITY 5: FINGER-PRINTS

People can also be classified according to their finger-prints. (Of course, this can be done for only living or recently dead people.)

Look at the pattern of markings on your right index finger. (A hand lens may be useful.)

Compare your finger-print pattern with the standard types shown at left. Can you identify the one that is closest to yours?

2.15 Make a note in your record book of the type of your index finger-print. You could do the same for your other fingers and your thumbs.

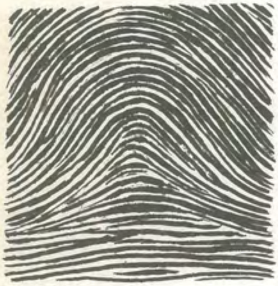


WHORL

You can make only a rough comparison. However, anthropologists who carry out this process have a complex scoring procedure which helps to make a more accurate measure of a print.

Prints taken of present-day Australians show the distribution listed below.

For both male and female
Whorl about 30%
Loop about 65%
Arch about 5%

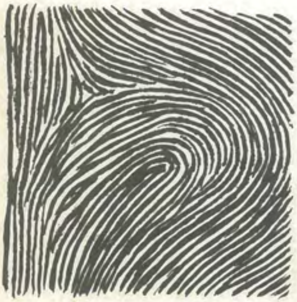


ARCH

Prints taken of Aborigines in Arnhem Land in 1948 showed the following distribution.

For both male and female
Whorl about 70%
Loop about 25%
Arch about 1%

As you can see, there is quite a difference between the two groups.



LOOP

Another difference is the greater depth and distance apart of the finger-print ridges of the Aborigines.

2.16 Check the finger-prints of as many other people as you can. How do the percentages of whorls, loops and arches compare with the figures for present-day Australians?

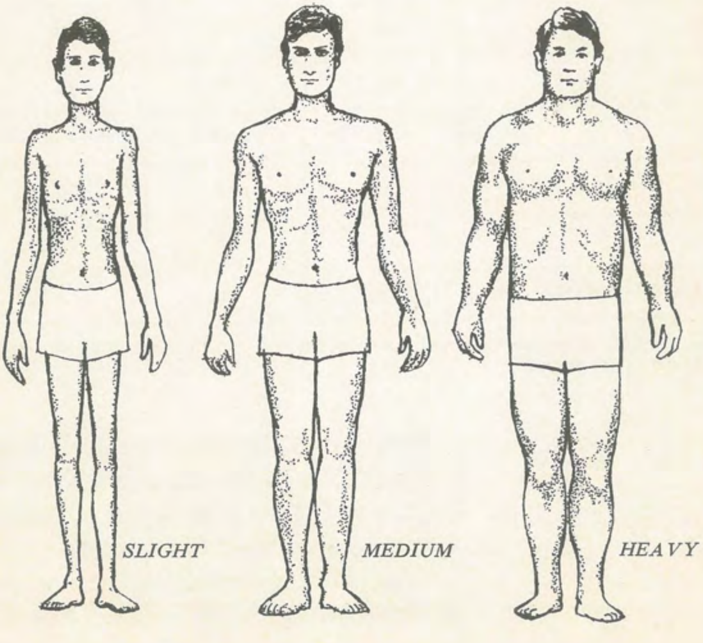
ACTIVITY 6: DETERMINING BODY SHAPE

As you saw in the photos on pages 24 and 25, people from one country as well as people from different countries can have varying body shapes.

One system of body shape classification uses the three extreme body shapes shown in the diagram below.

2.17 Turn back to the stick figures on page 28. Using the shape classifications below, into what groups would you classify the typical Aboriginal and European males?

2.18 Discuss what factors could affect body shape. By studying body shape is it possible to decide to which population group people belong. Make a report about your findings.



ACTIVITY 7: BLOOD GROUPS

Blood has certain substances in it which determine its group.

Your blood was determined from your father's blood group and your mother's blood group.

There are many different blood grouping systems and this grouping in itself is a complicated subject. One of the systems has four different types, called O, A, B, AB.

Different population groups have different proportions of each of O, A, B and AB types. Here are some figures for different population groups.

POPULATION GROUP	BLOOD GROUP PERCENTAGES			
	O	A	B	AB
AUSTRALIAN ABORIGINES	approx. 50	approx. 50	present in small numbers	0
AUSTRALIANS OF EUROPEAN DESCENT	49	38	10	3
CHINESE	46	23	25	6
ENGLISH	43	48	8	1
GERMANS	40	40	15	5
GREEKS	42	40	14	4
INDIANS	30	25	37	8
JAPANESE	30	38	22	10
SOUTH AMERICAN INDIANS	100	0	0	0

Adapted from the Encyclopaedia Britannica, vol. 3 and 'The World of the First Australians', by R.M. and C.H. Berndt.

Notice that the blood group B is more characteristic of the Japanese, Chinese and Indians in the list–the Asian peoples. Present-day Australians are mainly O and A.

There are regional differences in the proportions of blood groups in Aborigines. Blood group B appears in a warmer fringe around the north and the north-east of Australia. Otherwise blood groups O and A are distributed equally throughout Australia.

✍ 2.19 Look carefully at a map of the world. Is there anything around the north and north-eastern regions of Australia that could account for this small regional difference in blood group?

IS THERE AN ANSWER?

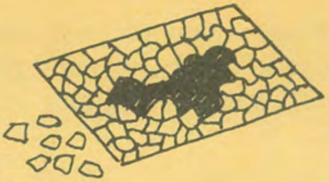
Blood group and finger-print findings indicate that the present Aborigines are descended from people from one population group. But measurements of other characteristics do not necessarily support this evidence. This contradictory evidence gives rise to different theories about the ancestors of Aborigines.

Some people claim that the available anthropological evidence supports the theory that Aboriginal ancestors were people from different countries.

Some people claim that it supports the theory that they were from one country.

OPTION

3



Puzzles and Signposts

As you try to trace the history of Aborigines in Australia you will find many puzzling features. So do archaeologists* and anthropologists*, but, fortunately, the number of signposts that act as guides is increasing. This option is a review of some available, puzzling evidence.

ACTIVITY 1: BACKGROUND INFORMATION

Collect two sheets–one labelled 'Jigsaw A' and the other labelled 'Jigsaw B'.

Cut out all the pieces which have A on them and try to fit these A pieces together. You may wish to work with a partner. (It is possible that the pieces have already been cut out for you.)

✍ 3.1 As you try to solve the puzzle, ask yourself the following questions. There is space on page 10 of your record book to write answers to these questions.

☐ Are you sure that all the pieces of the puzzle are there?

☐ Is the puzzle made easier by knowing the background picture and the shape?

☐ Is it true that as more of the pieces fit in place it is easier to find where the next piece fits?

☐ Are there any extra 'odd' pieces present?

---

* Options 1 and 2 contain information about the work of archaeologists and anthropologists.

Now cut out all the pieces which have B on them, and try to solve that puzzle.

3.2 As you try, ask yourself the same questions as for Jigsaw A. Enter your answers in the space provided.

3.3 Are there any differences between your answers for Jigsaw A and your answers for Jigsaw B? If there are, try to explain them.

Did you find that knowing the background helped? Would it always be easier to pick out the odd pieces in a puzzle, if you knew what the background was like?

Often the anthropologists and archaeologists who are trying to fill in the picture of the Aborigines in Australia are able to 'pick out' important discoveries by knowing about backgrounds. They use their knowledge (in much the same way as you used yours for the jigsaws) when trying to find answers to the questions:

☐ When did the Aborigines get to Australia?

☐ Where did they come from?

☐ Did groups of different racial types arrive at the same time? At different times? Or did groups of only one racial type come? Was the journey accidental or planned?

A puzzle and its pieces—a rock shelter excavation, Hunter Valley, New South Wales.

(Photo by Douglass Baglin, from 'The Dark Australians', by D. Baglin and D.R. Moore.)

ACTIVITY 2: BACKGROUND DATING AND CHANGES

In this activity you will be trying to fill in some of the parts of the jigsaw puzzle of the Aborigines. As background you will be using results found from radio-carbon datings of remains found at sites in Australia. (If you don't already know about radio-carbon dating, see page 16.)

The table below gives datings of some finds in Australia. For many years archaeologists worked with this background to try to find the origins of the Aborigines.

DATE OF FINDS –in time before present	**PLACE**	**OTHER INFORMATION**
8700	Cape Martin, SA	Tools, human occupation
6700	Orroroo, SA	Teeth from *Diprotodon** (no link with human occupation)
6570	Lake Menindee, NSW	Human occupation
6030	Tartanga, SA	Tools, human occupation
4850	Fromm's Landing, SA	Human occupation, tools
4055	” ”	” ” ”
3881	” ”	” ” ”
3756	” ”	” ” ”
3240	” ”	” ” ”
2080	” ”	” ” ”
4250	Devon Downs, SA	Human occupation
1177	Goose Lagoon, Port Fairy, V	Charcoal from midden

*** An extinct giant animal, related to the wombat.**

✍ 3.4 To try to interpret the dating you will need to plot information from the table on the opposite page. You can use a histogram for this. The axes are drawn on page 11 of your record book.

✍ 3.5 What do these findings tell? Can they answer the question about how long Aborigines have been in Australia?

The data in your histogram was the data used by anthropologists and archaeologists as their 'background' for many years.

At right: *Shelter no. 2, Fromm's Landing, South Australia–a limestone cliff region by the River Murray.*
(Photo by D.J. Mulvaney from his book 'The Prehistory of Australia'.)

Below: *Devon Downs rock shelter on the River Murray. Three different stages of Aboriginal culture have been found there.*
(Photo by Norman B. Tindale, from his book 'The Australian Aborigines'.)

Activity 2 continued next page

Recently more discoveries were made. They altered the background.

✍ 3.6 The more recent discoveries are listed below. Add them to your histogram.

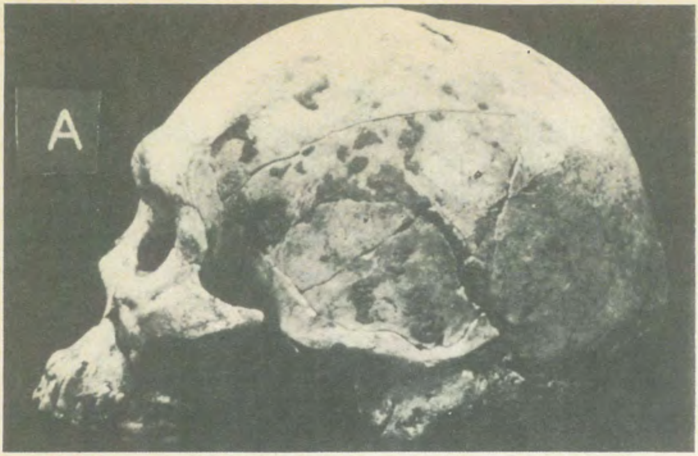
DATE OF FINDS –in time before present	PLACE	OTHER INFORMATION
25 000 to 32 000	Lake Mungo, NSW	Human occupation
26 000	Lake Menindee, NSW	
24 000	Keilor, V	Charcoal
18 000	"	Human cranium
15 000	"	Charcoal
18 200	Koonalda Caves, SA	Evidence of human occupation
13 700	" "	" " "
9 400	" "	" " "
15 900	Kenniff Cave, Q	Human occupation
11 250	Redcliff, V	Shell

✍ 3.7 What do the findings tell now? Make a report of your new interpretation (if any) in your record book.

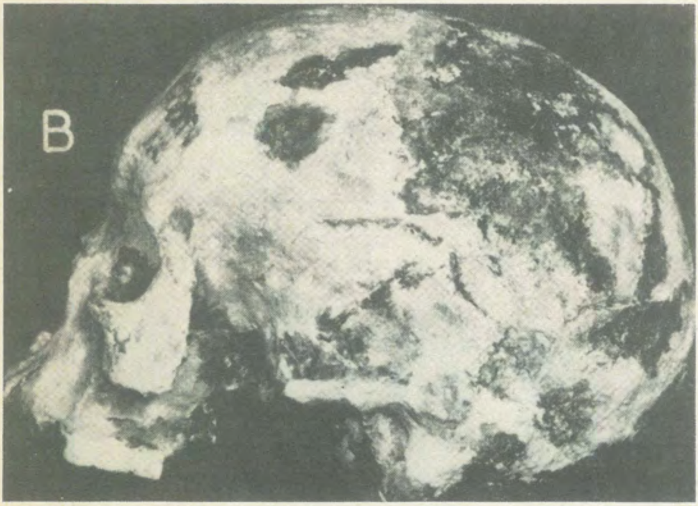
Look at the photos (on the opposite page) of Aboriginal skulls from different archaeological sites in Australia. The skulls A and B are very different in structure yet they come from a similar period– about the end of the last ice age.

✍ 3.8 What does this archaeological evidence indicate about the ancestors of present-day Aborigines?

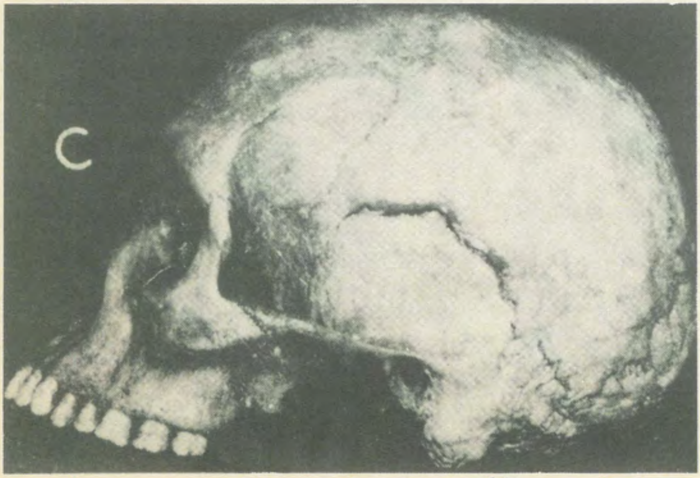
Anthropological evidence on the blood groups and finger-prints of present-day Aborigines suggests they are of one racial type. (There is more about this on pages 32 and 34.) This evidence supports the theory of one racial type for the ancestors of the Aborigines. However, some scientists disagree with this.



A–Bourke's Bridge Skull, Kow Swamp Area, Victoria.
(Photo by courtesy of A.B. Thorne.)



B–Keilor skull, south-eastern Victoria.



C–Modern Aboriginal skull.

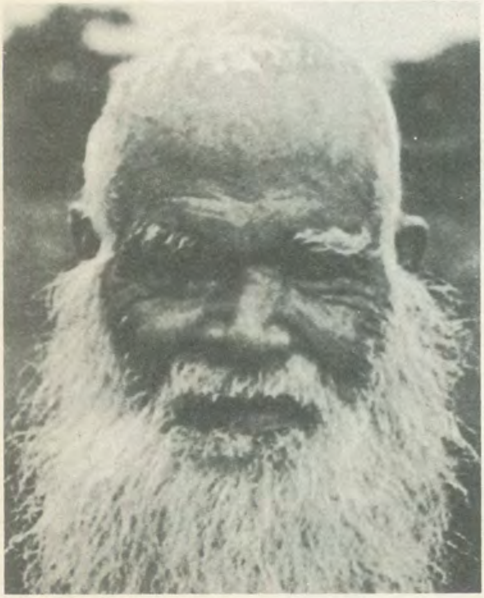
(Photos B and C are from 'The Original Australians', by A.A. Abbie, published by A.H. and A.W. Reed, Sydney.)

ACTIVITY 3: LIVING EVIDENCE?

Today in Sri Lanka (Ceylon) and India there are people who look very much like Australian Aborigines. Anthropologists call these people Australoids. It has been suggested that there could also be a link between Australian Aborigines and the Ainu people of Japan.

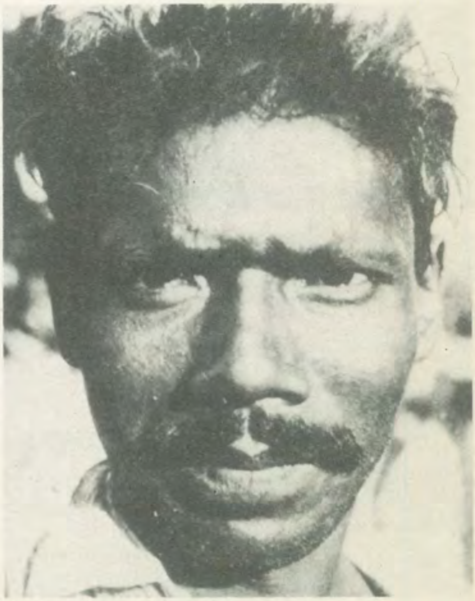
One way anthropologists investigate such possible links is by measuring physical characteristics and then working out indexes so they can compare them. One index you could check easily from the photos below would be the nasal index. (If you do not already know how to calculate a nasal index, see page 30.)

✍ 3.9 Calculate the nasal index of the men shown in the photos below. Compare the values with those for typical adult Europeans and adult Aborigines (given on page 31). What conclusion can you draw?



An Ainu man from Japan.

(Photo by Norman B. Tindale, from his book 'The Australian Aborigines'.)



An Indian Australoid man.

(Photo from 'The Australian Aborigines', by Norman B. Tindale, published by Golden Press Pty Ltd, Sydney.)

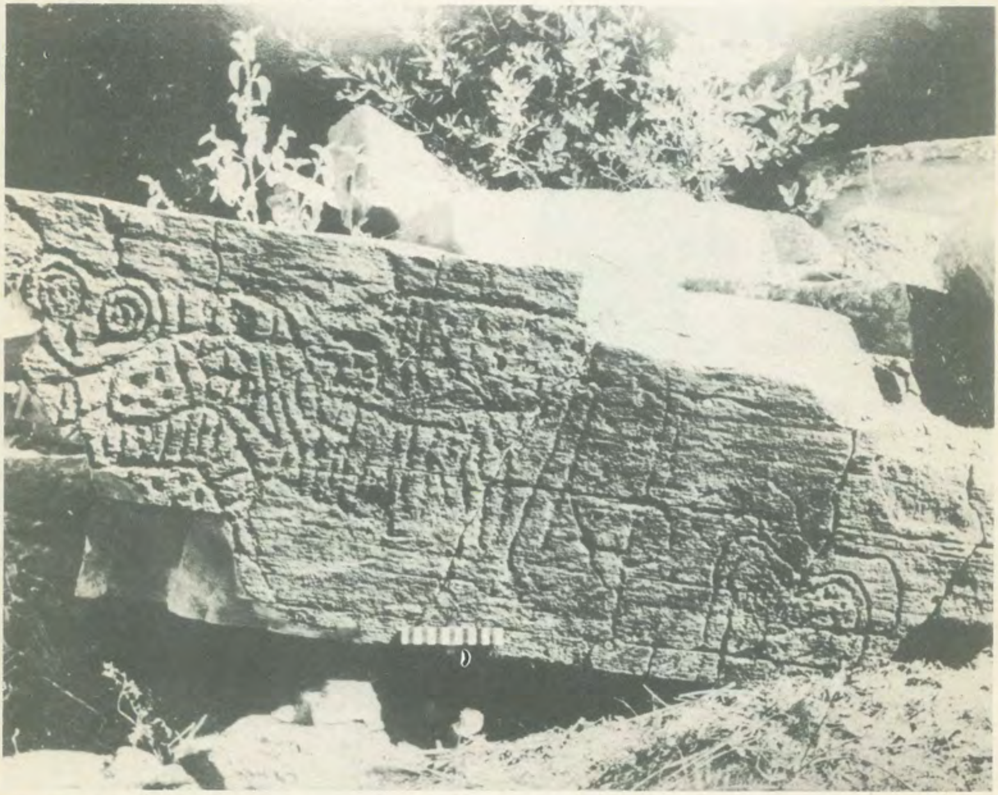
A New Engraving

You all recognize Aboriginal paintings. What would you be thinking if you found a rock picture like the one in the photo below? There would be a puzzling find indeed.

This engraving, unlike any Aboriginal art known before it, was found recently in central Australia.

Present-day Aborigines know next to nothing about it. As far as local tribe members are concerned, the engraving was 'done by their ancestors'.

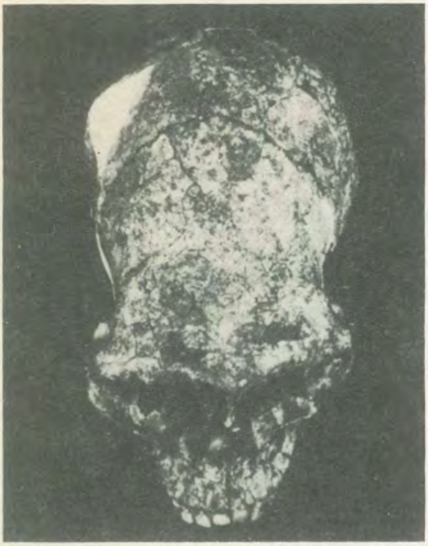
The puzzling rock engraving found in central Australia.



(Photo by Robert Edwards. By courtesy of the Department of the Interior.)

Activity 3 continued next page

STOP PRESS



One of the skulls found at the site mentioned in the newspaper article at right.

The information in the newspaper extract at right presents a puzzle. Perhaps the people who disagree with the one origin for the Aborigines are correct after all? The news item concerns a site which had just been discovered in northern Victoria.

Photo above and extract at right from 'The Sun-News Pictorial', Wednesday, 16 May 1973—reprinted with permission.

HUGE SKULLS

At least 40 skeletons of a very early type of aboriginal have been discovered in northern Victoria.

Scientists say the find is one of the most important of its kind in the world.

They say it indicates that two different types of aboriginals lived on the Australian continent at the same time, about 20,000 years ago.

One type of aboriginal, physically as modern as the present day aboriginal, is known to have inhabited Australia 25,000 years ago.

But the recent find is of a type with physical characteristics not seen in the modern aboriginal.

The jaws of some of the skulls are as big as any found in the world.

One massive jaw is about the same size as the Heidelberg Jaw, generally accepted previously by anthropologists as the biggest in existence.

Several other jaws found at the site, about 200 miles north of Melbourne, are only slightly smaller than the Heidelberg Jaw.

The Heidelberg Man, discovered in Germany in 1907, is known to have lived between 300,000 and 400,000 years ago.

The skulls also show some resemblance to Java Man (Homo Erectus) who lived on earth about 500,000 years ago.

Location a secret

But despite these similarities, the Australian National University, Canberra, has established by carbon-dating that this early aboriginal population lived between 10,000 and 20,000 years ago.

The exact location of the find is being kept secret to prevent vandals and sight-seers damaging or slowing work.

Scientists working on the find say the skeletons have established a link which may fill gaps in establishing the racial origins of Australia's first inhabitants.

BACK TO THE JIGSAWS

Finds like the engraving in central Australia and the site in northern Victoria are like the odd pieces of jigsaw puzzles. They don't fit in with known background.

Many other finds make the story of Aborigines in Australia a great detective story. Detectives often have to rely on forensic science laboratories to find out such things as whether a hair belongs to a certain person or not.

In the same way archaeologists and anthropologists rely on support from 20 to 30 special branches of science. They need help from scientists with a far-ranging knowledge–from those who know about blood groupings to the botanists who can identify pollen grains.

But still the questions about the origins of Aborigines stay unanswered. Maybe even the questions themselves need changing? Maybe people shouldn't be asking: 'Where did they come from?' Maybe they were always here?

Will the answers ever be found?

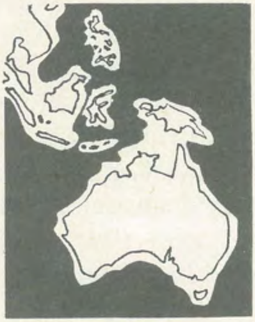
Some recent finds may alter the background and, like signposts, guide the way to finding answers.

Could this fossil find help to answer the jigsaw problem? What branch of science would be involved?

EXTRA THINGS YOU MAY LIKE TO DO

As has been indicated in this option, there are contradictory theories about the origins of the ancestors of Aborigines.

Finding answers to the questions on these pages will introduce you to some of these different opinions. You could follow these up on your own, or with others in a group. You may like to report your findings to the class.



WHAT ABOUT THE ICE AGE?

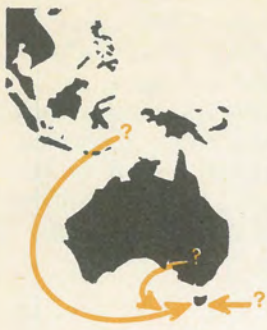
About 12 000 years ago ice covered much of the Earth. What use have scientists made of this in their theories on how the Aborigines came to Australia?

WHAT IS THE TRI-HYBRID THEORY?

A tri-hybrid (three different migrations) theory of migration was popular at one time. What did this suggest? The Negritos were part of this theory.

Negritos, northern Queensland.
(Photo by Norman B. Tindale, from his book 'The Australian Aborigines'.)

WERE THE TASMANIANS SEPARATE?



Some people believe that the Tasmanian Aborigines had ancestors different from those of other Aborigines. Other people believe they were at one time part of the mainland population. What evidence is there to support these ideas?

WHO ARE THE DETECTIVES?

What work is done by palaeontologists and speleologists? And by the many other scientists who assist archaeologists and anthropologists? (You may need a good dictionary.)

Two palaeontologists from The Western Australian Museum staff (above left) confer with a volunteer from the Western Australian Speleological Group (note label on helmet). These people have been sieving material brought in buckets from an excavation nearby, and have been picking out bone fragments, snail shells, stone implements and other specimens for later detailed study.

(Photo by courtesy Dr D. Merrilees, The Western Australian Museum.)

OPTION 4

Making a Living is a study of the past and present Australian way of life. It will help you find out about the different interactions of the two life styles with the flora, fauna and physical features of the environment.

Making a Living

BASIC NEEDS

All animals, including humans, have certain basic needs and can survive only in regions where these needs are met. The needs for food and water are the most basic. Shelter may also be necessary for survival, whether it be some kind of structure such as a house, or clothing.

Astronauts on the Moon, for example, must take the means to cater for their basic needs with them.

The population of Australia today is more than 13 million. It is estimated that in the mid-1700s, just before colonization, there were about 300 000 Aborigines living here. What was available for them to satisfy their needs? If you work out some of your own needs, you may be better able to answer this question.

4.1 Think back to the foods and drinks you used yesterday. Make a list of them and their sources. For example, milk comes from cows or goats; bread comes from grain foods like wheat. There is space on page 12 of your record book for the list.

Milk comes from cows
No! Milk comes from machines

You are unlikely to have used much that was available to the Aborigines. Possible exceptions are fish and, of course, water. There were no indigenous (naturally occurring) grain foods as we know them. Wheat, barley and oats were unheard of, although Aboriginal women did make a dough mixture from ground wild seeds. There were also no indigenous animals like sheep, cattle or horses. The herding of animals for use as food, clothing supplies, and beasts of burden was not known to the Aborigines.

✍ 4.2 Make a list of the clothes you are wearing and their sources. For example, sheep supply wool, while coal (plus modern technology) is the source of nylon.

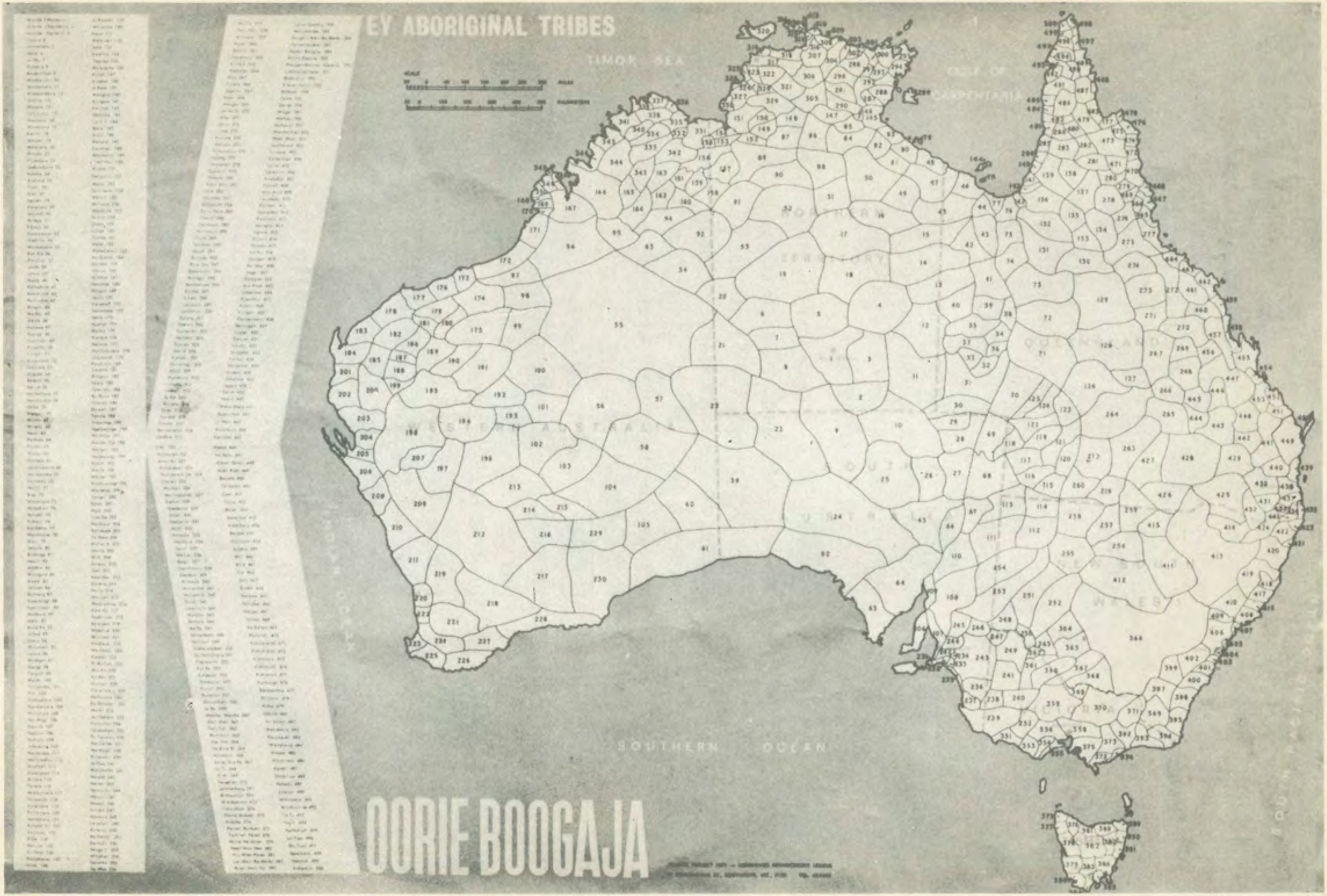
✍ 4.3 Make a study of your home or school. List some of the materials used in the construction and their sources. For example, timber comes from trees, and iron from iron ore—with the assistance of technology. (People today are heavily dependent upon the products of technology.)

✍ 4.4 Go back to your lists for clothing and housing and mark any entries that did not require a technological manufacturing process for their making.

Nylon comes from ...

You are now in a position to appreciate just what the Aborigines did **not** have to help them satisfy their food and shelter requirements.

For food and shelter, the Aborigines had to rely upon naturally occurring materials. They also needed naturally occurring supplies of fresh water. Since the food and water available in an area could not supply large groups for ever, the Aborigines had to scatter around the continent to make full use of the available resources.



(Photo by courtesy of the Aborigines Advancement League.)

TERRITORIES

Eventually, the Aborigines separated into about 500 tribes. The people of each tribe gradually developed a common, characteristic language, a set of customs and beliefs (see Option 5) and, in general, occupied a fairly well-defined territory.

The map opposite shows the distribution, sizes and names of the 500 or so Aboriginal tribes.

The size of the territory depended very much on what resources it could offer. Quantity of vegetation and animal life can depend on whether a territory is hilly or flat; whether the soil is fertile; what the rainfall is; and the climate.

✍ 4.5 It may help you to understand the tribal distribution, if you check the rainfall, climatic and physical landscape conditions throughout Australia. You could do this from an atlas. You could then sketch this information on to the tribal map in your record book.

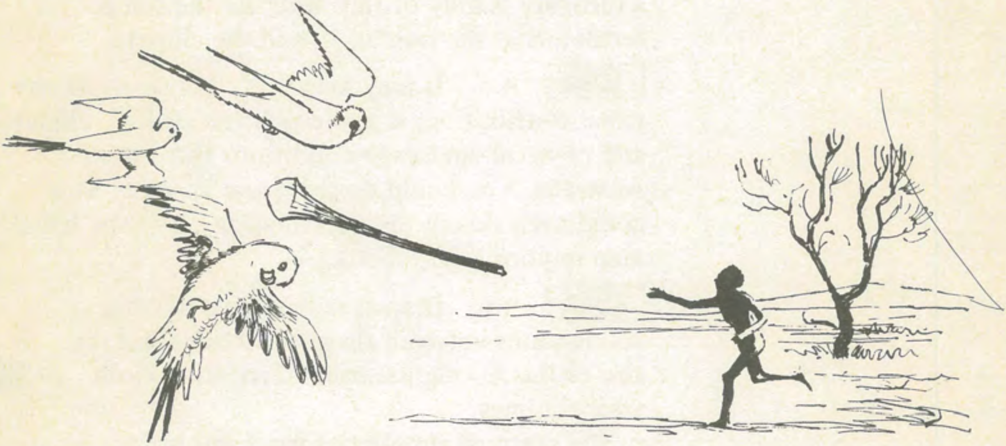
✍ 4.6 Discuss with others possible connections between these conditions and the size of the Aboriginal tribal territories. Note your findings.

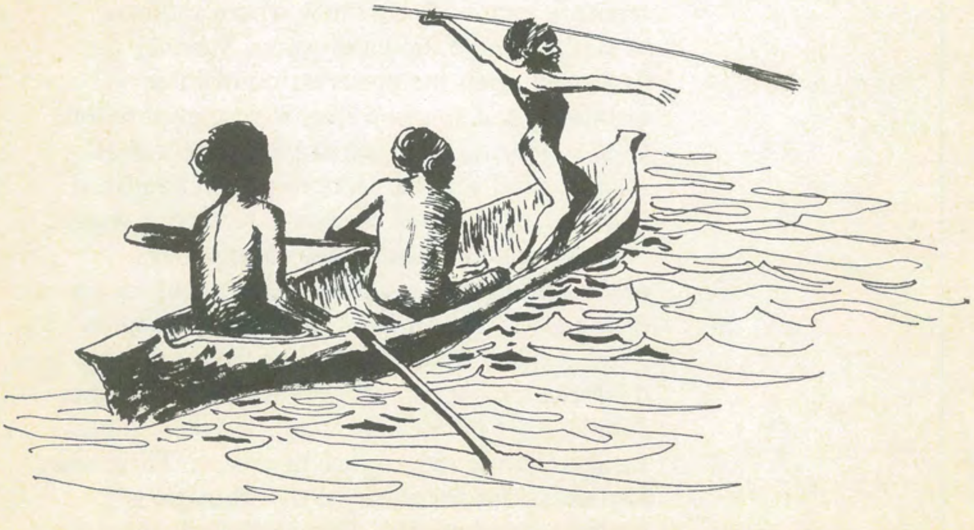
The seasonal supplies of food and water determined the directions the Aborigines followed as they moved around their territories. Each member came to know his territory very well. He knew where and how to find available food and water. Survival depended upon the preservation of these resources, and so camp sites were moved before an area became depleted of food. Because of all this, food supplies were usually replenished in time for the Aborigines to return next season.

Large-scale social activities also mainly depended upon the seasons. A plentiful supply of food was needed to support many people. Thus at times when this was available, the different tribe members or even different tribes could gather in one area to renew friendships, meet relatives, and arrange marriages. These were also occasions for many of the Aborigines' important ceremonies. (See Options 5 and 6.)

COLLECTING FOOD

In some areas, the hunting and foraging for food took up much of the day. Both men and women, and to a certain extent children, had to contribute to the task.





4.7 What skills did the Aborigines need to develop? For example, what skills did the Aborigines use in locating live animals and getting close enough to spear or club them?

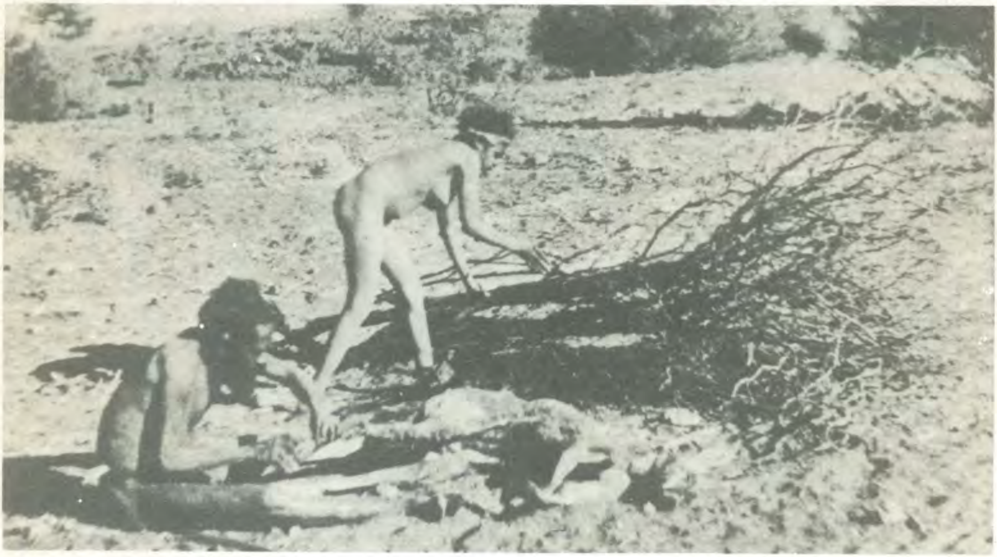
Satisfying Basic Needs continued next page

PREPARING FOOD

Some foods, such as fruits, were eaten raw, so that little preparation was needed for these. However, the women did grind some seeds between stones and prepare a dough for cooking in the hot coals of a fire. They also knew how to treat certain poisonous foods so that they became edible.

Animals–kangaroos, lizards, and others–were cooked on fires. Preparation in these cases required obtaining firewood and lighting the fire. (See Option 7.)

Parts useful for things other than food were often removed before cooking. When kangaroo was the food, for example, the sinews might be removed and kept for binding points to spears. The claws might be removed for necklets. Often blood was drained and mixed with ochre and charcoal to make paint.



One stage in preparing a kangaroo for cooking. The man is removing the sinews. The woman is preparing firewood. There are other photos on page 56f showing some other stages of the cooking.

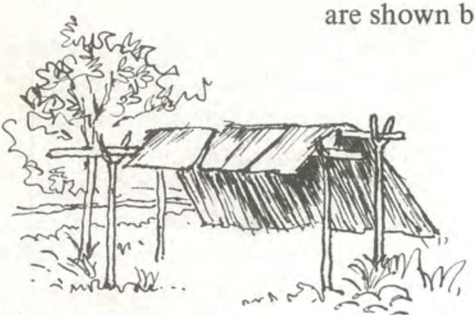
(Photo above by Norman B. Tindale, from his book 'The Australian Aborigines'.)

FOOD ALLOCATION

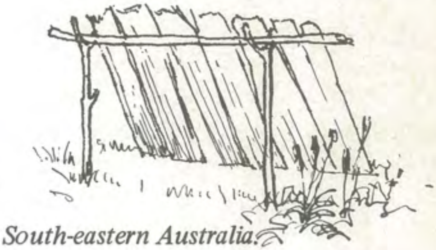
The social structure of a tribe (see Option 5) often determined who received certain parts of a cooked animal. It was also customary to share everything with other members of the tribe. Thus a family whose hunter did not return with a kill, would be supplied by the more fortunate hunters. In this way everybody within the immediate grouping could be sure of something.

SHELTER

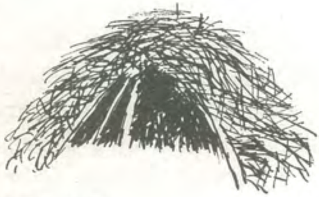
Because Aborigines usually needed to move camp often, their shelters could be only temporary. Their construction depended upon the availability of local materials and the weather conditions. Some examples are shown below.



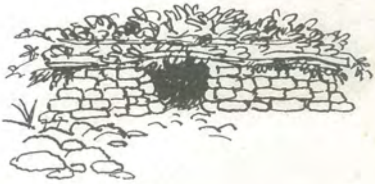
Arnhem Land.



South-eastern Australia.



Central Australia.



Western Victoria.

CLOTHING

In general, Aborigines did not use clothing. Sometimes, however, they would coat their bodies with animal fat as protection against cold and insects. They often slept between small fires to shield themselves from the weather. In the colder southern areas, members of some tribes sewed animal skins together and wore them inside out for protection. (See photo on page 57 of man wearing skins.)

Any other clothing was used purely as decoration. Ornaments were made from seeds, shells, feathers, animal bones, claws and teeth. These were worn as headbands, waist-bands, necklets and so on. Ornamentation was also important for many ceremonies. (See Option 6.)

ARTEFACTS

People can do some things better if they use tools or weapons. A stone hammer hits harder than a hand and a spear gives a hunter much more range than an arm or a hurled rock.

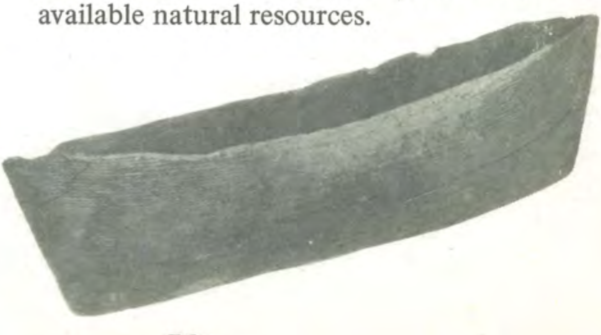
Such things extend man's influence on his environment.

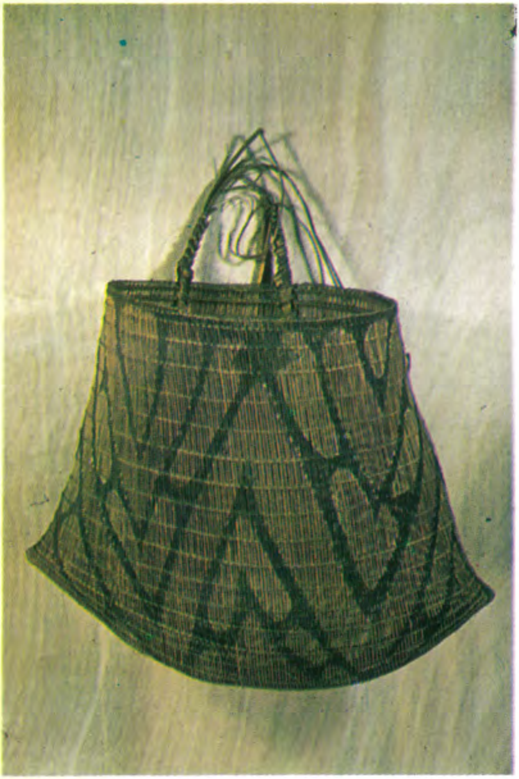
As the hunting and gathering Aborigines moved around their tribal lands searching for food, they kept with them only the tools (implements) and other possessions they could carry.

Large implements, like grinding stones, were often set up in a certain place and left there. Grinding stones usually were left near water-holes. The seeds the Aborigines gathered for grinding would be mostly on trees, shrubs and grasses growing near water-holes.

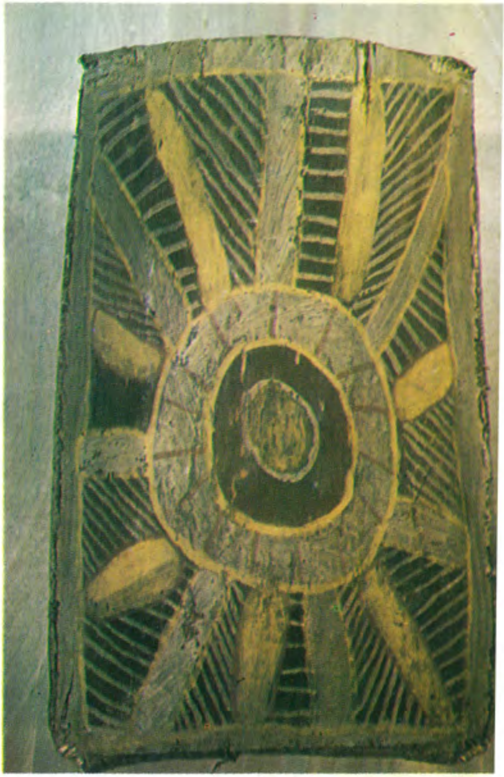
The Aborigines also made use of rocks or sticks which could be used without much modification. They were always looking for useful, natural things which could be used and then thrown away. By using natural objects as tools they were able to keep their loads to a minimum. Simple stone adzes and scrapers, shell scrapers and bone points were used to make the Aborigines' weapons and other implements. (See Option 7.)

The women used digging sticks made from available wood in their search for food. They also carried various containers. Dilly bags were plaited or woven from fibre and various grasses. And there were shallow wooden dishes, bark baskets held together with wax and gum, and containers made from animal skins. All were 'manufactured' from available natural resources.





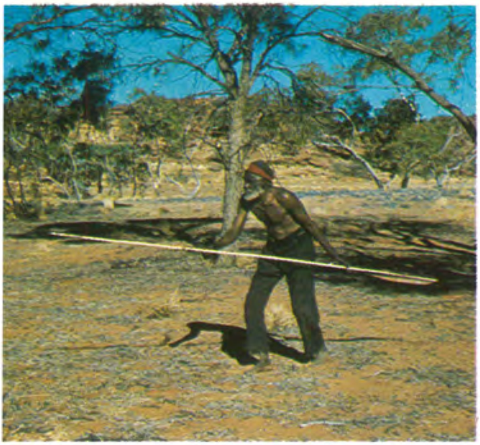
Decorated basket of split cane.
Cardwell, Queensland. (X 5977 N.M.V.)



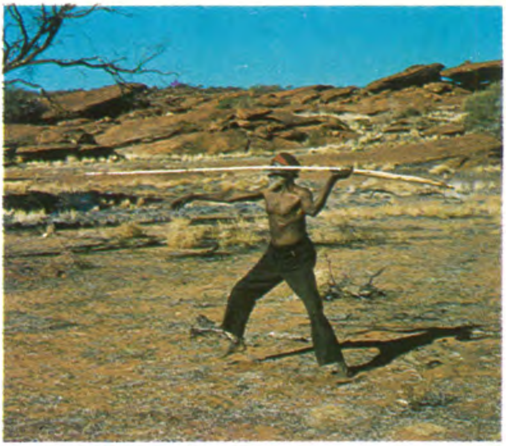
Ochred bark basket. Melville Island,
Northern Territory. (X 18030 N.M.V.)

(Photos top and left by A.L. West. Courtesy of the National Museum of Victoria.)

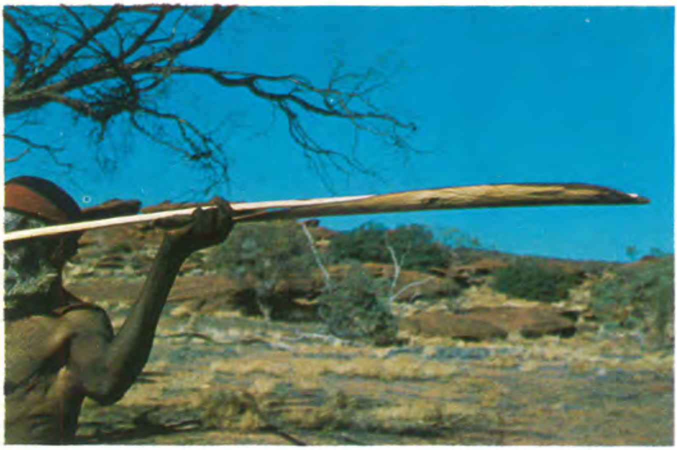
SPEARTHROWING



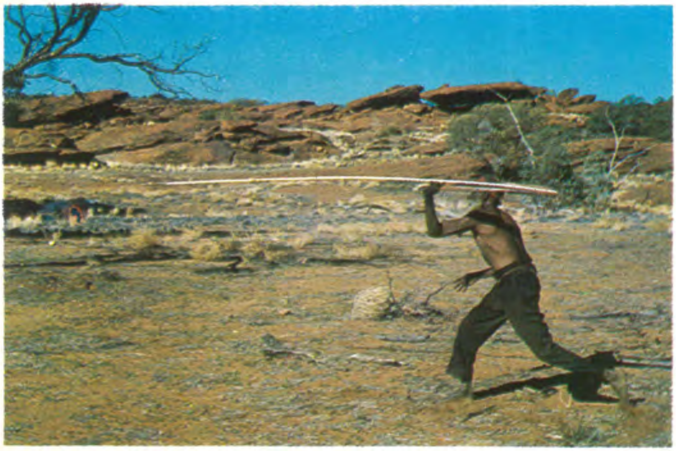
Approaching the prey.



Ready to throw the spear.

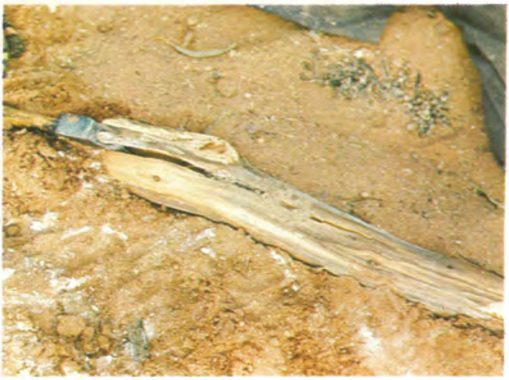


The hand grip.

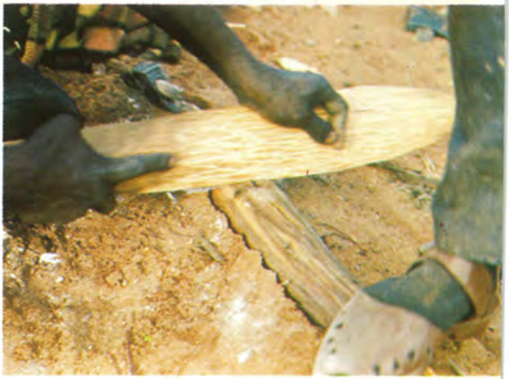


Throwing the spear.

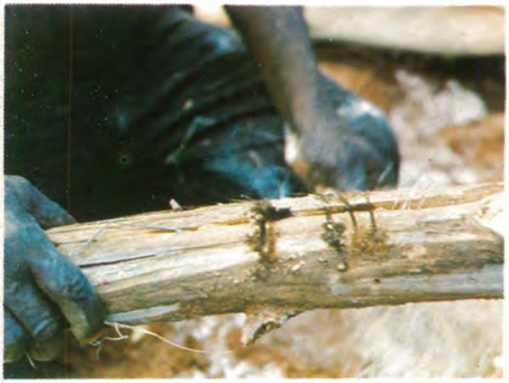
FIRE MAKING



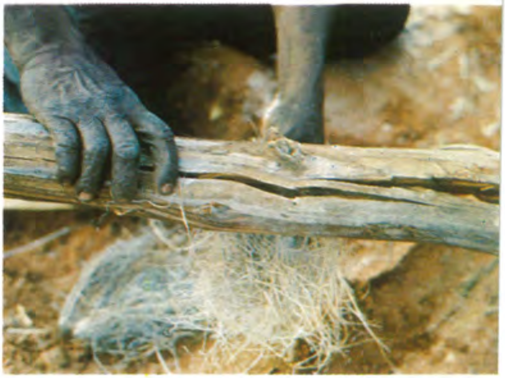
Split mulga wood log.
Tinder held in crack.



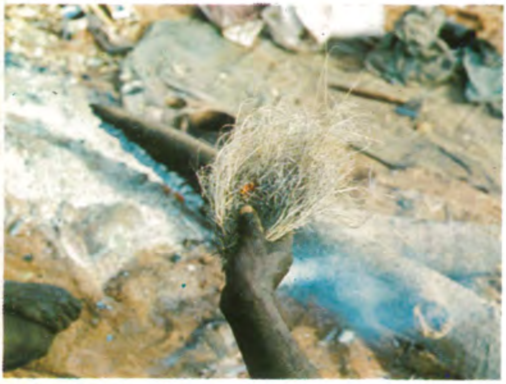
Rubbing spearthrower over split log to produce heat.



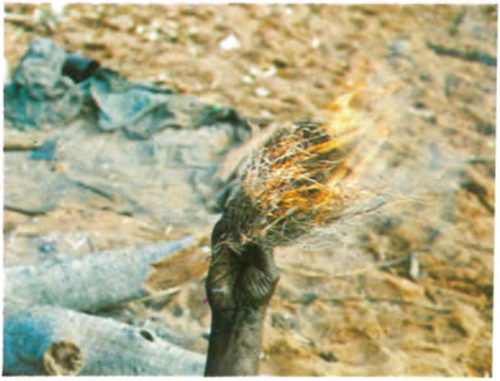
Scorched, split log containing smouldering tinder. Note grooves caused by rubbing of spearthrower.



Tipping smouldering tinder on to dry fibre.



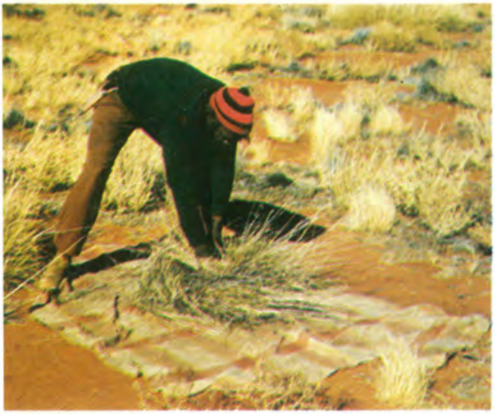
Waving dry fibre and smouldering tinder in the air—an alternative to blowing on them.



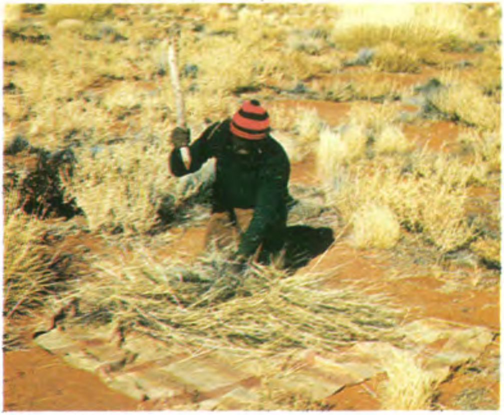
Dry fibre igniting.

(Photos on pages 56b and 56c by A.L. West. Courtesy of the Australian Institute of Aboriginal Studies.)

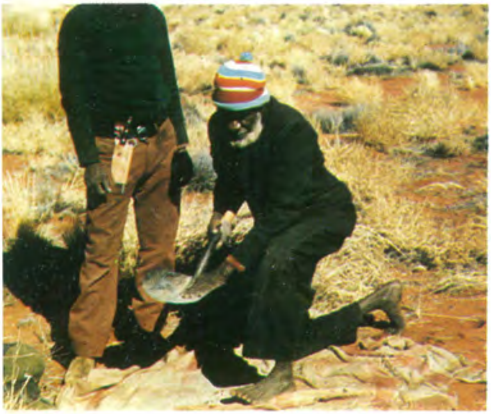
MAKING RESIN



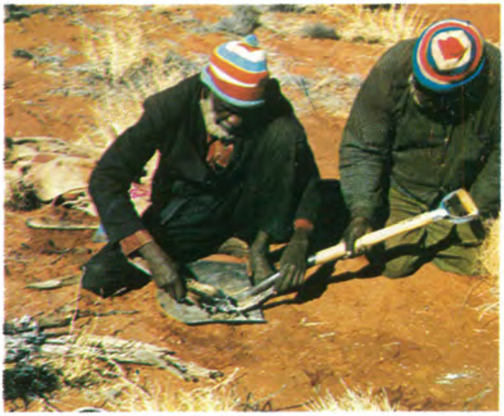
Dead spinifex grass placed on blanket.



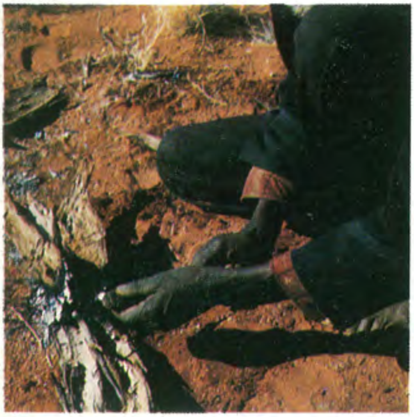
Threshing the spinifex.



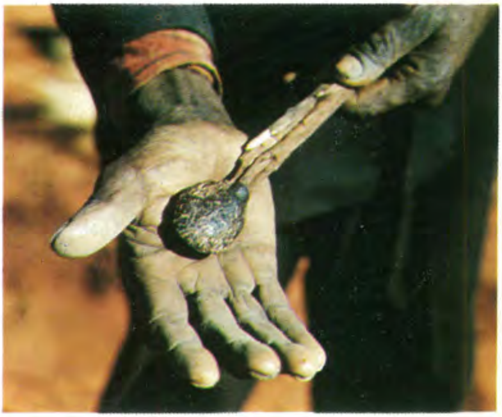
Winnowing beaten spinifex to obtain resin beads.



Applying heat to resin beads.



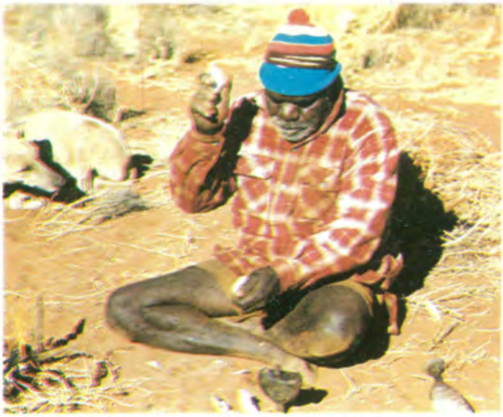
Moulding resin on to stick.



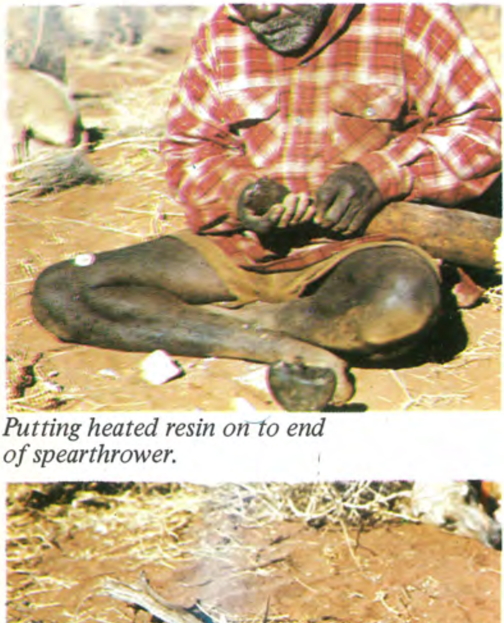
Lump of resin on carrying stick.

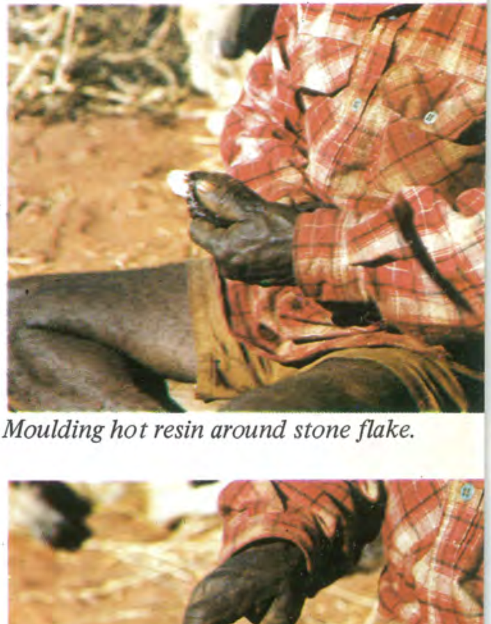
(Photos on pages 56d and 56e by A.L. West. Courtesy of the Australian Institute of Aboriginal Studies.)

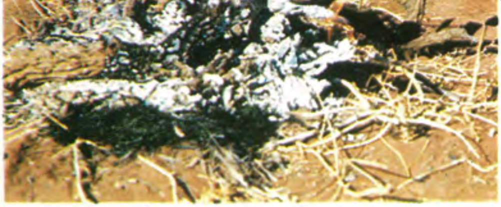
USING RESIN TO MOUNT A STONE FLAKE

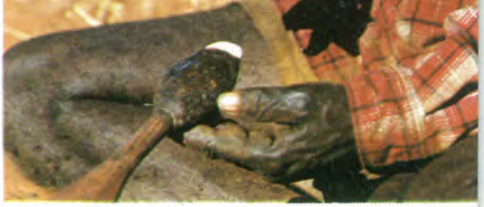

Striking stones together to obtain stone flake.

Wetting thumb to prevent blistering when touching hot resin.

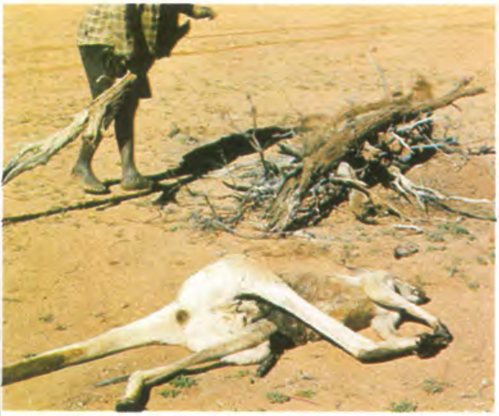

Putting heated resin on to end of spearthrower.


Moulding hot resin around stone flake.

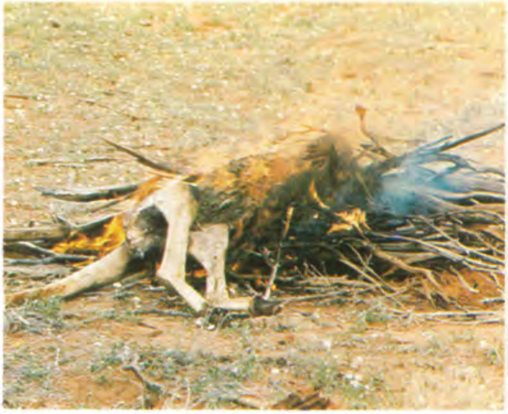

Reheating resin for final setting of stone flake.


End product–final trimming of stone flake on end of spearthrower.

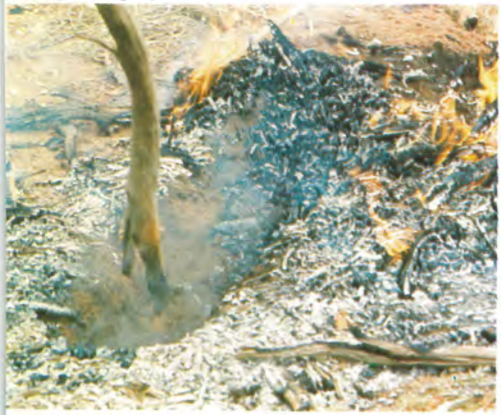
COOKING A KANGAROO



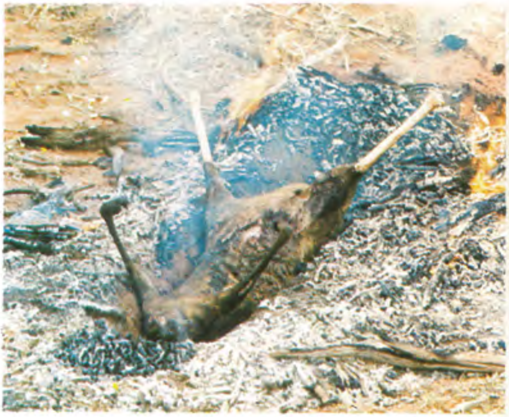
Beginning of a meal.



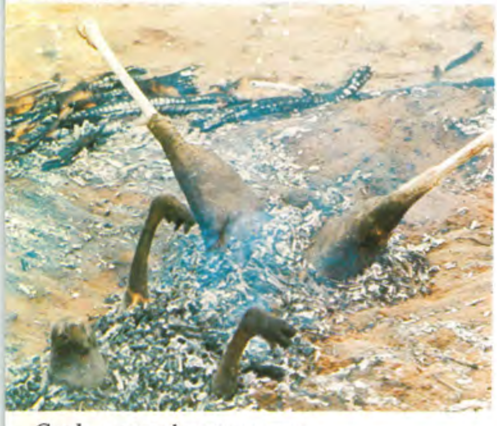
Singeing the fur.



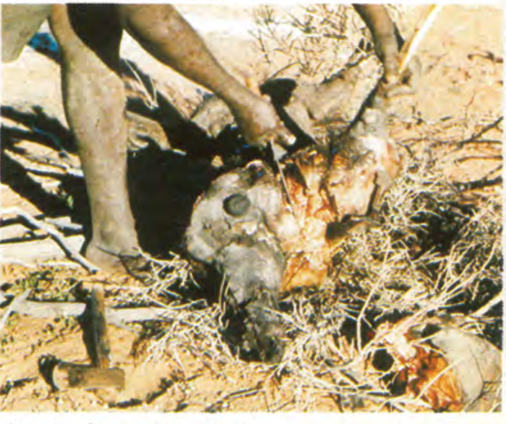
Scraping coals aside.



Carcass placed in depression in ground.



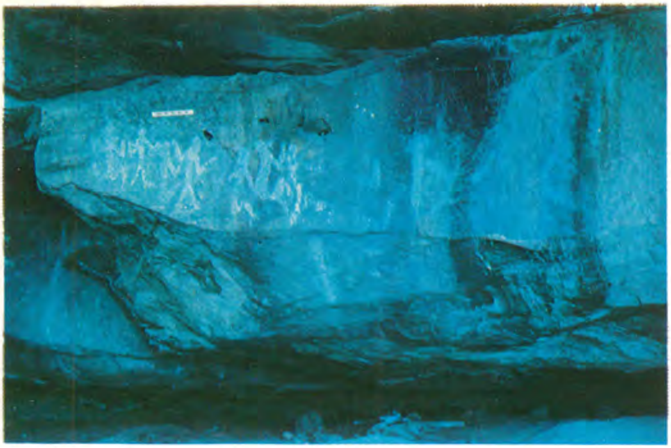
Coals scraped over carcass.



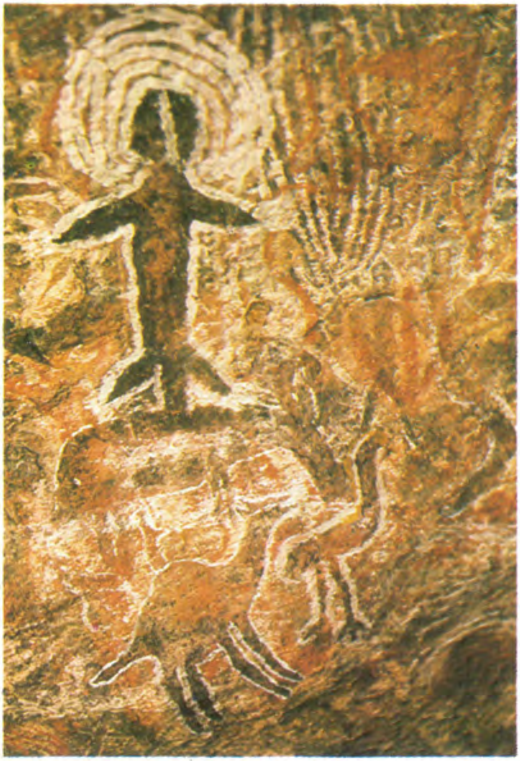
Ready for eating. Notice
a) very undercooked meat, and
b) makeshift cloth of twigs and branches to keep meat off ground.

(Photos by A.L. West. Courtesy of the Australian Institute of Aboriginal Studies.)

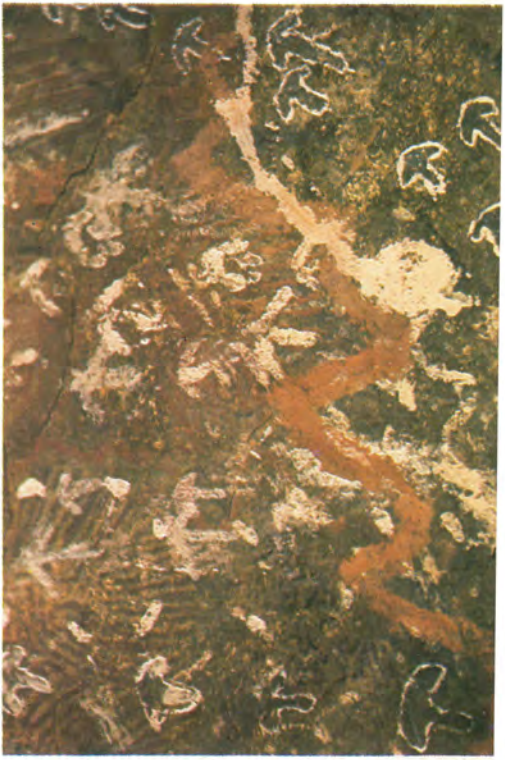
PAINTINGS



Cave painting.
Grampians, Victoria.
White stick figures.
(Photo by A.L. West.
Courtesy of the Nationa
Museum of Victoria.)

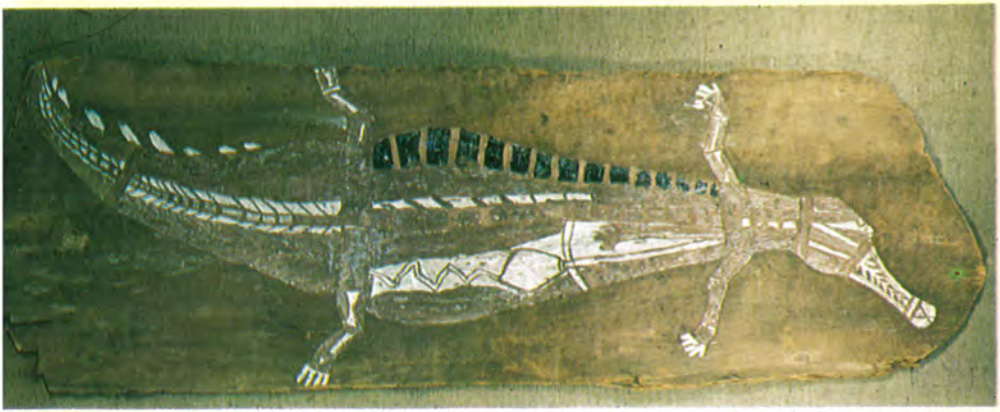


Rock painting. Cave Hill, central Australia. Traditional ceremonial figure of man with emu and European-introduced camel.

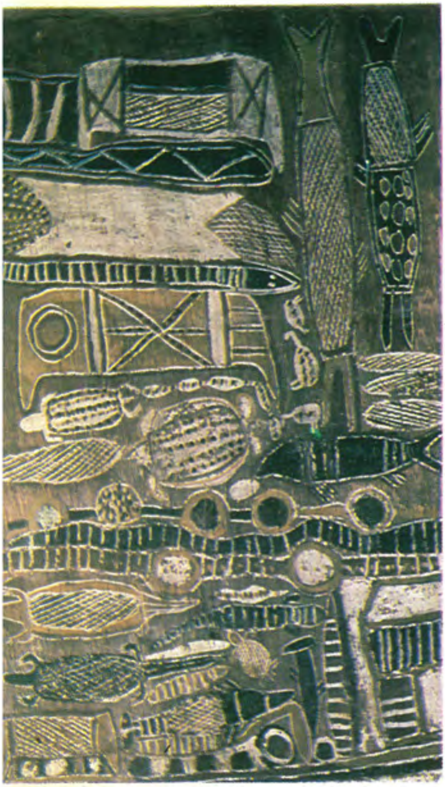


Cave painting. Kulpitjata, central Australia. Representation of men tracking emus.

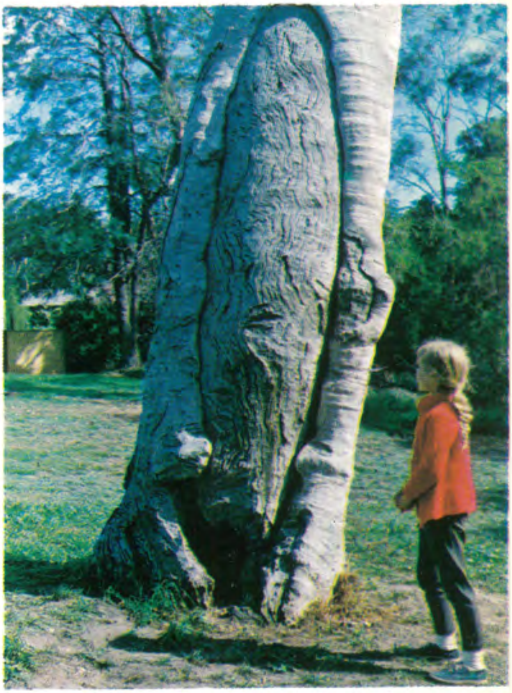
(Photos by A.L. West. Courtesy of the Australian Institute of Aboriginal Studies.)



Bark painting of fresh water crocodile–X-ray style. Western Arnhem Land. (X 19913 N.M.V.)



Bark painting of fishing scene. North-eastern Arnhem Land. (X 44186 N.M.V.)



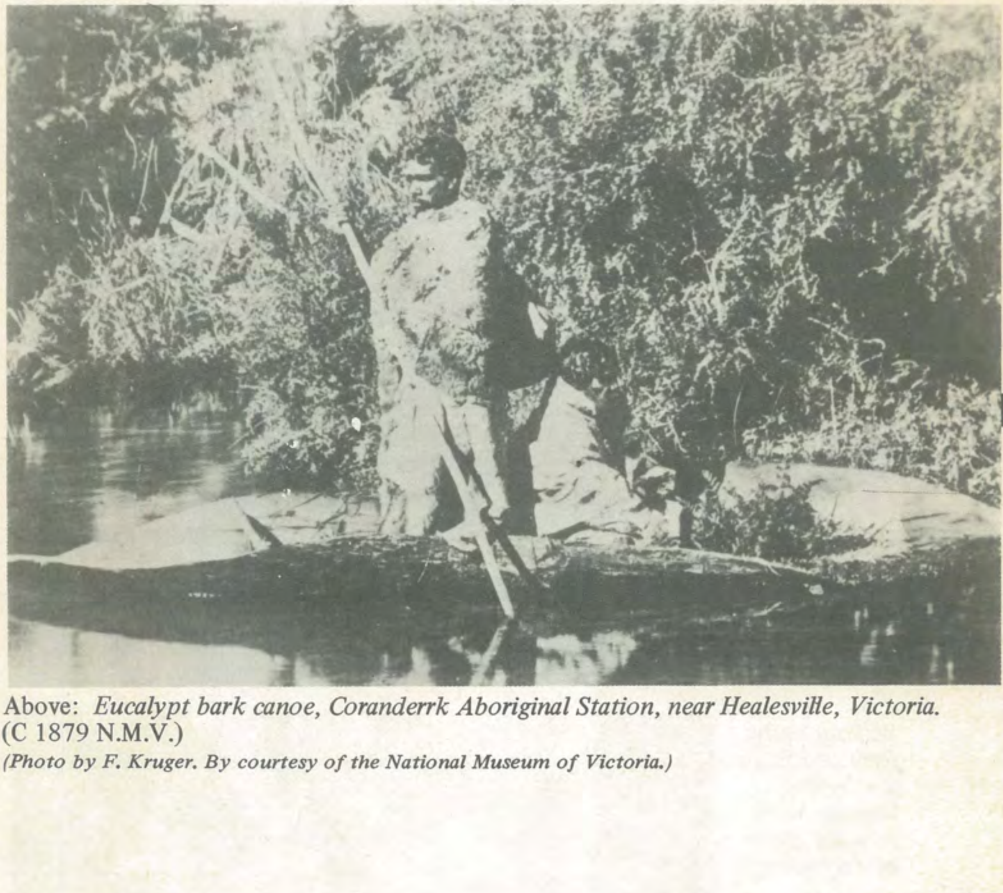
Bark canoe tree. Eaglemont, Victoria.
(Photo by D.A. Casey. Courtesy of the National Museum of Victoria.)

(Photos by A.L. West. Courtesy of the National Museum of Victoria.)

TRANSPORT

Walking was the only method of travel on land. The wheels that are so common today were unknown to the Aborigines. Beasts of burden were not used.

Aborigines living near rivers and the coast made water craft ranging from simple log or bark floats, used once to cross a river and then abandoned, to large dug-out canoes. Some dug-outs had outriggers.



Above: *Eucalypt bark canoe, Coranderrk Aboriginal Station, near Healesville, Victoria.* (C 1879 N.M.V.)

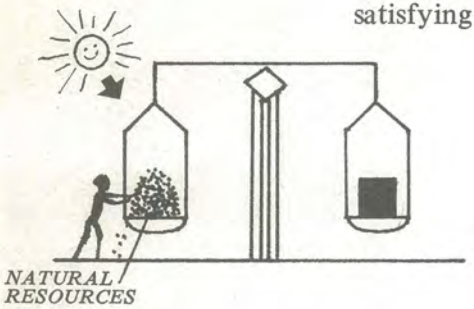
(Photo by F. Kruger. By courtesy of the National Museum of Victoria.)

Photos on page 56: *Upper and lower millstones, Mootwingee, New South Waves,* (X 75281 N.M.V.)*; 2 Hafted stone axe, Northern Territory,* (X 13452 N.M.V.)*; 3 Quartzite knife, Northern Territory,* (X 13663 N.M.V.)*; 4 Boatshaped wooden vessel, northern Australia,* (X 4913 N.M.V.).

(Photo by courtesy of the National Museum of Victoria.)

ENVIRONMENT

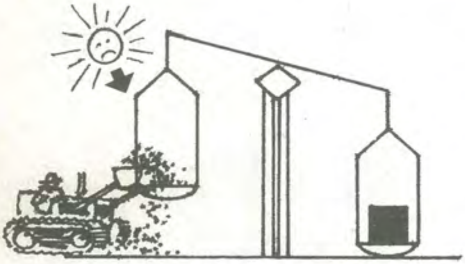
The Aborigines made little attempt to change their environment. They did try to affect its operation by rain-making ceremonies and by observing laws which they believed affected the supply of food. Generally, their survival depended upon their ability to maintain a reasonable balance between what they took from the environment and what the environment could afford to give. If too much were taken from an area, it might be ruined for a very long time as a source for satisfying basic needs.



The Aborigines existed reasonably well with little or no technology before the Europeans arrived. The Aboriginal way of life encouraged a non-destructive interaction with nature.

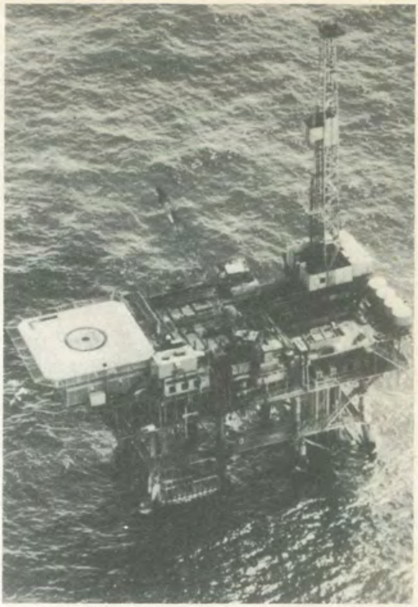
✍ 4.8 Technology has certainly improved the way of life of most people–but what effect has it had on the environment? Discuss this question with others, and make a report on your findings.

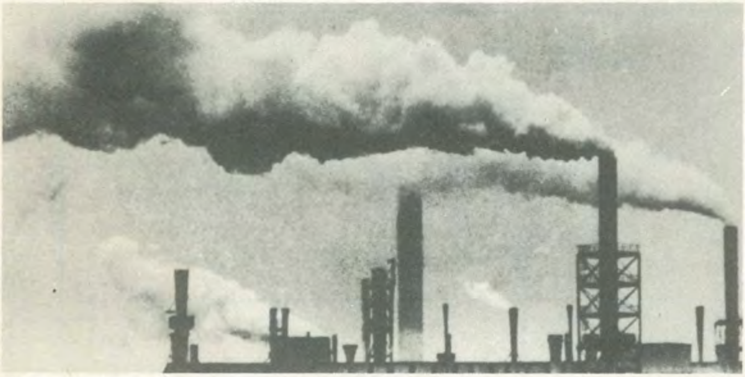
There are some other questions raised on these pages that may help you with your discussion.



Will our native flora and fauna survive the changes being brought about by technology?

Fertilizers can increase crop yields. Can they also be harmful?
(Photo by courtesy of Massey-Ferguson.)





How much longer will our oil supplies last?
(Photo by courtesy of the Petroleum Information Bureau.)

Pollution—a necessary part of a technological way of life?

EXTRA THINGS YOU MAY LIKE TO FIND OUT

This option is able to give only a very superficial treatment of some ways used by Aborigines to make a living. The topic is much larger. You may like to combine with other students to research some of the following suggestions, or some of your own. You could prepare detailed charts and posters on the various sections.

FOODS

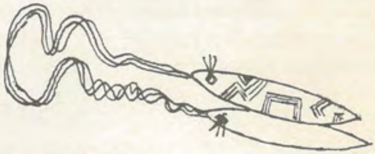
Find out more about the foods that were available throughout Australia for the Aborigines. Was their diet adequate? What foods provided the necessary proteins, carbohydrates and vitamins? Do present-day Australians need much the same quantities of these as the earliest inhabitants did? Or more? Or less?

HUNTING

Find out what other methods Aborigines used to obtain their food and water. Did they ever trap their prey? Did they use fishing nets? Did they hunt alone or in groups? What use did they make of fire? Did they use sources of water other than creeks and pools?

TRADING

Many areas lacked certain items necessary to Aborigines. During the times that different tribes got together much trading was done. What was traded? Did the Aborigines barter? Was there a form of money?



ARTEFACTS

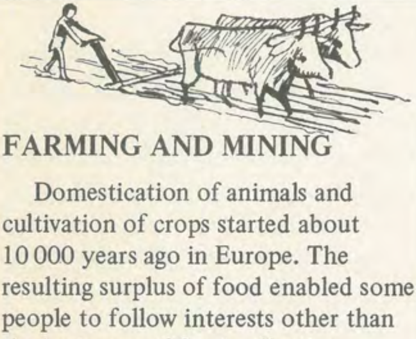
What artefacts besides those already mentioned were made by the Aborigines? How did these artefacts differ throughout Australia?

USE OF DRUGS

Game-keepers at many national parks throughout the world often use dart-guns with drugs on the tips when tagging animals. The Australian Aborigines also used a narcotic to stupefy emus and other game before killing them. Find out what you can about how the Aborigines used plants like tobacco and eucalyptus and the narcotic plant, the 'pitjuri'.

DISEASE

Find out about Aboriginal diseases before colonization and during colonization. How did the Aboriginals survive without hospitals, blood banks and injections? What effect did European diseases, e.g. influenza, measles, have on the Aborigines?



FARMING AND MINING

Domestication of animals and cultivation of crops started about 10 000 years ago in Europe. The resulting surplus of food enabled some people to follow interests other than the basic one of food collecting for survival.

By 3000 years ago, most of the inhabitants of Asia, Europe and Egypt were using metals to improve their way of life.

Try to suggest reasons why the Aborigines didn't develop along these lines.

SURVIVAL

The ABC-TV/BBC-TV program *Doing a Perish* dealt with survival in the outback.

One story concerned two men who died when their car became bogged in soft sand and they couldn't move it. They hadn't taken drinking water with them and they died before the search party found them. But they died near water. The water in a car radiator is drinkable, but they apparently didn't think of that. When the searchers got there, the radiator was still full.

To get the car out of the soft sand, the search party just let the tyres half down and drove it out. Partly flat tyres pull better through soft sand than fully inflated ones, but the men apparently didn't know that. (Do you know why flat tyres function better?)

Find out what you can about survival in the Australian environment.

What lessons can you learn from the Aborigines' way of life?

OPTION 5

Groupings and Patterns of Behaviour

Whenever individuals gather together to form groups, standards of behaviour emerge. Often leaders are elected and rules are introduced.

This option is an introduction to the pattern of life and associated behaviour of Australia's first inhabitants. It concerns mainly the Aborigines of central Australia. You will be able to find out about other groups later.

Guess who's Mum for the dishes today?

People living with others in a house or other kind of dwelling share the responsibilities of running the group's everyday activities. Arising out of this relationship, come rules that govern the behaviour of the members of the group.

Is there a leader? Who does the shopping? Who washes the dishes? Who looks after the bills? Answers to questions like these differ for different groups. For instance, a family of a father, a mother and their children will organize things differently from a group of adult males or females living in flats or hostels.

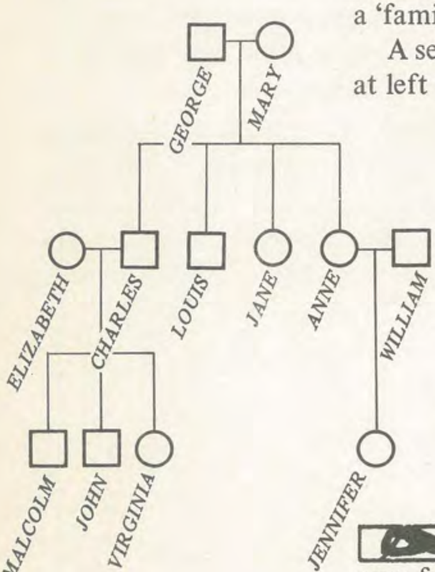
FAMILY GROUPINGS: AUSTRALIANS–PRESENT

The grouping of people occurs in many ways. When a group of adults who are not related live together it is usually because they have chosen to do so. Or because they belong to a religious organization or some other society whose members need to live together to do their work.

When children live with their parents in a family group it is because they were born into that group. In other words, they are there because of **kinship**. For example you are the son or daughter of your parents. Your parents in turn are the children of two different couples–your grandparents.

This family relationship goes back and back. It can be traced as far as the family history is known. When expressed in diagrammatic form, it is called a 'family tree'.

A section of a family tree is shown at left for three generations.



5.1 Discuss the meaning of the tree with others. Try to work out how the members are related. For example:

What relation is George to Mary?
What relation is Charles to Jane?
What relation is Elizabeth to George?
What relation is John to Mary?
What relation is Malcolm to Jennifer?

There is space on page 18 of your record book to make notes about your findings.

5.2 Try drawing the section of your own family tree back to your grandparents. If you haven't get enough information to do this, try making one up.

5.3 Are there rules or expected forms of behaviour for you to observe when you meet your relatives? For example, how do you behave if you meet your grandparents?

Family Groupings: Australians–present continued next page

Above: *A nuclear family group.*
Below: *An extended family group.*

In many present-day Australian families only parents and children live together. This family, known as the nuclear family, then visits other relatives and friends from time to time.

There are other family groupings which are larger and may contain grandparents and/or other relatives. This **extended** family may also live together as a group. This type of extended family is common to Australian families of Italian and Greek origin.

Do you ever call adult neighbours or friends auntie or uncle? Many people do. Are these aunties and uncles really relatives? Even though these 'relatives' don't live with you, your family is often extended to include them.

5.4 What is achieved by having an extended family? Discuss the advantages and disadvantages of both types of family. There is space in your record book for your findings.

FAMILY GROUPINGS: AUSTRALIANS–PAST

The basic unit of everyday social living for the Aborigines was also the family. A man, his wife (or wives) and their children shared the responsibilities of providing food, shelter and companionship.

All Aborigines belonged to extended families, too. There were tribal **kinship classifications** in which all tribe members were classed as relatives. For example, if you were an Aboriginal child and your father had brothers, the brothers would also be called your fathers. Also, your father's brothers' children would all be classified as your brothers and sisters.

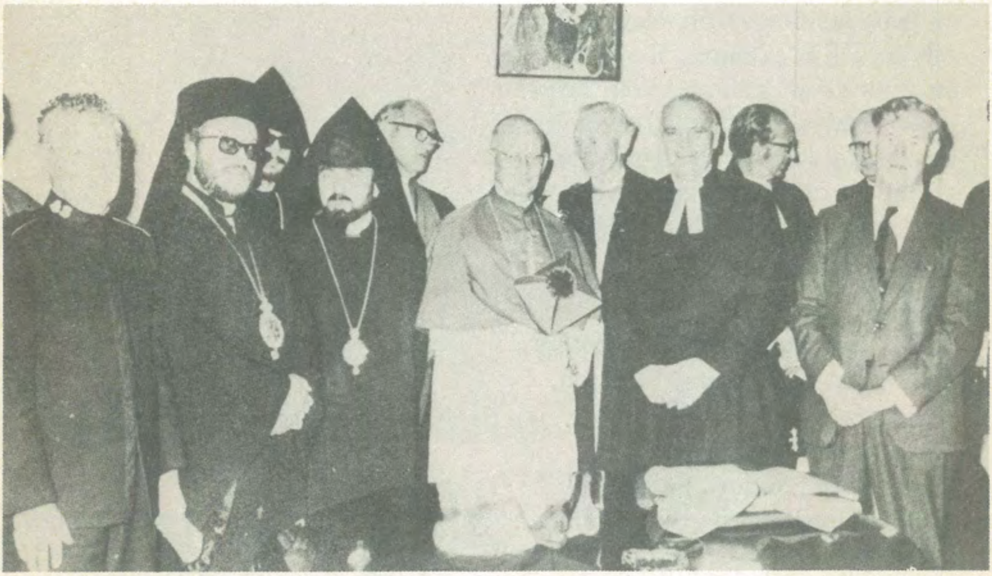
5.5 Look back at the family tree on page 63. Using the Aboriginal kinship classification, what relation would Jane be to Jennifer?

For each relationship of this kinship classification there were expected rules of behaviour that had to be learned. It might be that a man could not talk to any woman who was classified as his mother-in-law.

The man might, however, be expected to send certain gifts to his real mother-in-law (his wife's real mother).

5.6 What relationship would these mothers-in-law have to the man under European family rules?

Other extended family relationships might bring a man to act as a sponsor for a boy at an initiation ceremony or arrange the marriage of a certain relative. This form of tribal family grouping provided emotional support and affection for the individual. In this way a close-knit relationship between tribal members was ensured.



This photo of Victorian heads of churches and visiting representatives of the World Council of Churches, was taken after an ecumenical service in Melbourne in 1973. Are certain beliefs and behaviour expected of such people and other members of their groups?

(Photo by courtesy of the official Review of the 40th International Eucharistic Congress, Advocate Press, Melbourne.)

RELIGIOUS GROUPINGS: AUSTRALIANS–PAST

When people no longer have to work hard hunting for food just to survive, they begin to settle in certain areas and think about other things.

It is at this stage that they begin looking around and asking themselves questions such as: 'Where did we come from?' 'How were these surroundings of ours made?'

In an attempt to answer such questions, the origin of life is often attributed to divine (or super) beings.

Since the Aborigines' survival depended so much on an intimate knowledge of nature it is easy to see why their answers were closely connected with their environment.

They believed that their creators were spirit people who had appeared long long ago in the Dreamtime, usually as mixtures of animal and human forms. The part human, part animal spirit people were often known to Aborigines by names such as the Kangaroo Man, the Emu Man, the Wombat Man, and so on.

These spirits roamed the countryside producing the landscape features, the animal and plant life and also some humans–the ancestors of the Aborigines.

The Aborigines believed that it was these ancestors who established the various rituals which link the deeds of the creators, the spirit people, with the sites at which these deeds were performed. These sites then became sacred sites.

Many groups of people have places which are sacred to them. Christian people believe that Jesus Christ was born at a certain place in Bethlehem. This is a sacred place to them. The city of Mecca is sacred to Moslems. The Prophet Mohammed was born there.

The Aborigines believed that they could keep in touch with the spirit people and make use of their magical powers if they followed the teachings of the ancestors and re-enacted the rituals.*

*** A more detailed account of the religious beliefs of central Australian Aborigines is given on pages 72 and 73. You could read it now, if you liked.**

Religious Groupings: Australians–past continued next page

TOTEMISM

In all things Aborigines had an intimate relationship with nature. (For one thing, they did not think of their relationship as being so very different from that which other animals or things such as trees, rivers and mountains had with nature.)

You have seen that Aborigines believed that their creators were spirit people who were mixtures of animal and human forms. They associated themselves with these spirits by **totems.**

For example, the diagram opposite shows the travels of a spirit Kangaroo Man during the Dreamtime. The Kangaroo Man performed noteworthy deeds at all the places marked **X.** All ancestor Aborigines who lived along the route of his travels would be linked to the kangaroo–they would have the kangaroo totem. The ones who lived at the top three sites might also have the water-hole, fire or mountain totem, and so on. These ancestors would then establish rituals of songs, dances and ceremonies to link the places with the deeds of the Kangaroo Man.

All places marked **X** on the diagram opposite would be sacred to all Aborigines of the kangaroo totem.

Inheritance

By common understanding (law) all of an ancestor's children would have the same totems as the ancestor. If a son married, his children in turn would have the kangaroo totem. The inheritance passed on for generation after generation through the father.

If a daughter married someone from, say, the emu totem, her children would inherit the emu totem–through their father. (Sons and daughters always married into other totems.)

Thus, through the years a group of people inherited totems in a given locality from their fathers*. This group was known as a **local descent group.**

Responsibilities

By law, the territory surrounding the sacred sites was owned by the group. Initiated male members of the group were bound to preserve these totemic sites and organize associated ceremonies. Local descent group I (in the diagram) would be responsible for the three totemic sites indicated.

If they were having a ritual ceremony to remember the Kangaroo Man making fire, they would invite members of local descent groups II and III.

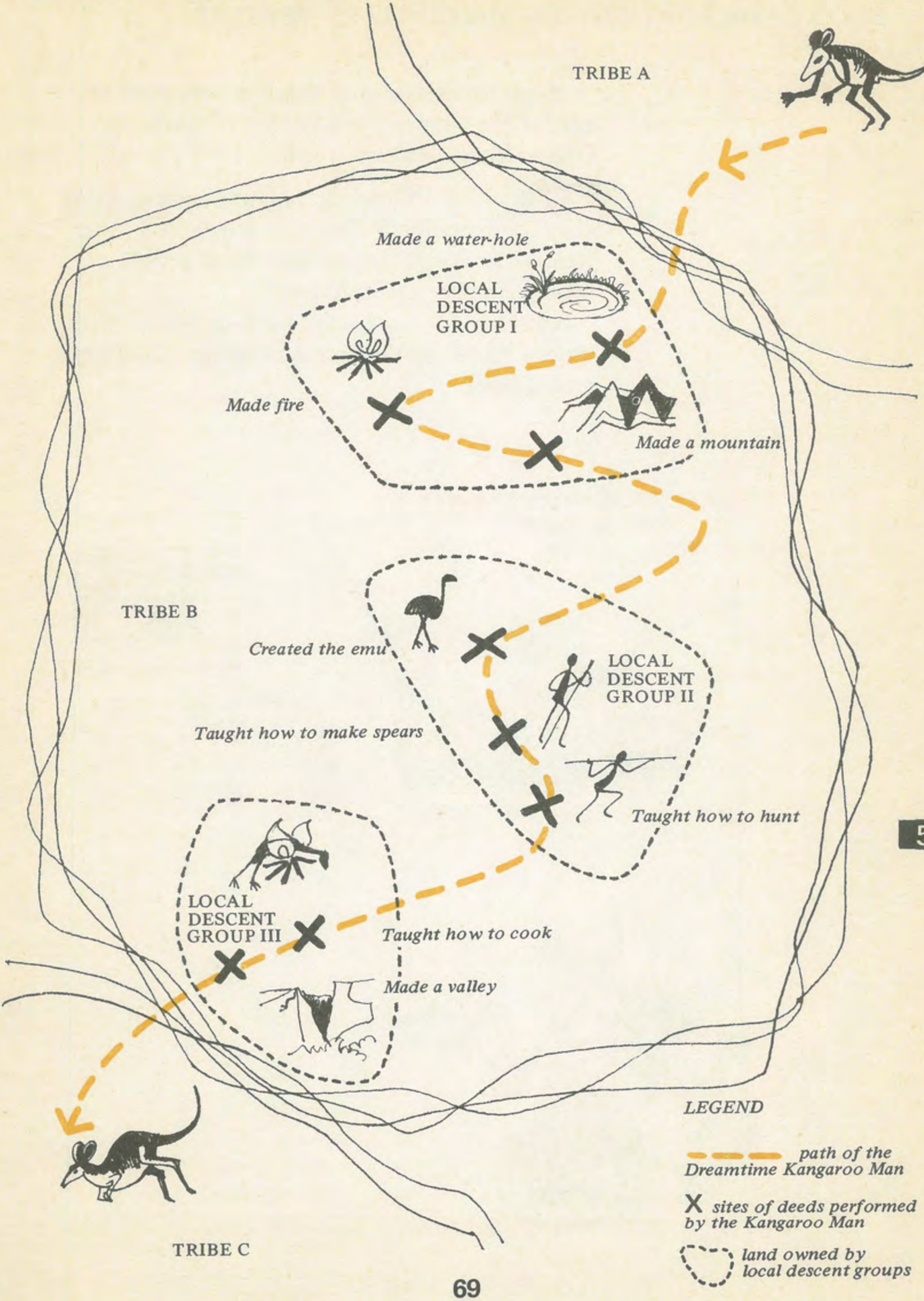
Since the Kangaroo Man also passed through the territories of tribes A and C, some members of these tribes would also have the kangaroo totem. Members of these neighbouring tribes would probably be invited to the fire-making ceremony, too.

Spirit beings other than the Kangaroo Man also probably passed through the same area. The Aborigines would therefore have other totems as well.

Every such totemic relationship added more forms of expected behaviour to the Aborigines' life style.

*** In some areas descent was from the mother's side rather than the father's. In these areas, children would have the totems of their mothers.**

Travels of a Dreamtime Kangaroo Man



FOOD GATHERING GROUPS: AUSTRALIANS–PRESENT

Many foods available today are pre-cooked and/or pre-wrapped in a variety of containers. Originally all food was fresh.

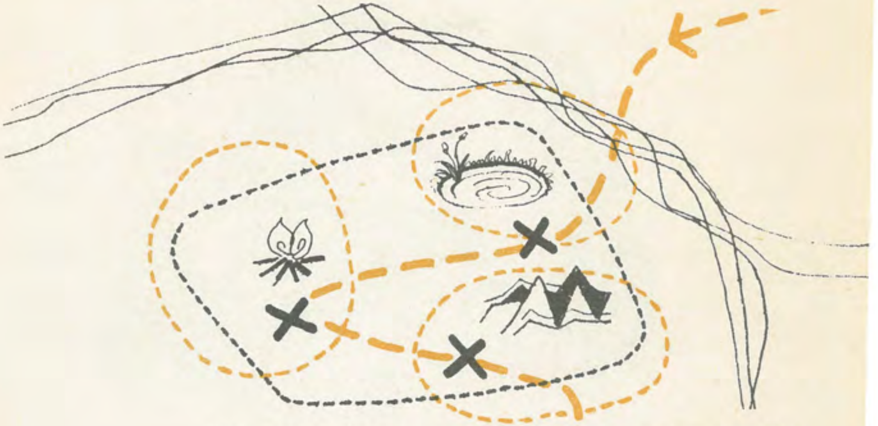
5.7 Where do you go to get most of your food supplies? Why is so much fresh food treated, packaged and stored? What groups of people supply our fresh food?

You may like to discuss these questions with others. Record your findings on page 22 of your record book.

This food gathering's not so hard . . .
JOES FISHING BOATS FOR HIRE
JOES

FOOD GATHERING GROUPS: AUSTRALIANS–PAST

Consider the tribal territory owned by **local descent group I** on page 69. This has been re-drawn below.



If a season were poor, very little food would be available. In this case very few people could live together in one area as a group. Two male members of the local descent group and their 'nuclear' families might search for food over a certain area. The other local descent group males and their 'nuclear' families would group in a similar manner to form other food searching groups. Anthropologists call such groups **hordes**.

In a good season, all the local descent group members and their families would probably be able to remain together. In this case there would be just one horde.

In this way members of the religious local descent groups socialized in different sized hunting groups (hordes).

You can see that different groupings were a vital part of the Aborigines' life style. There were other forms of grouping as well–each form with its own rules that group members had to abide by. To outsiders, such as anthropologists, the pattern of Aboriginal life seems complicated. However, to the Aborigines, it was clear and understandable.

THE DREAMTIME

Here is an extract from *The Dreamtime; Australian Aboriginal Myths in Paintings,* by A. Roberts and C.P. Mountford. The extract tells of the creation story as believed by some central Australian Aborigines.

'Although the aboriginal idea of the creation of the world is much the same, in general pattern, throughout Australia, the details vary from tribe to tribe. The following myth from central Australia is typical of many:

'In the beginning, before there was any life, the earth was flat and featureless, unbroken by any mountain range, watercourse or major natural feature. Nor was it inhabited by any living thing.

'Then, at some time in the long-distant past, which the aborigines poetically refer to as the 'Dreamtime', giant, semi-human beings, resembling one or the other of the creatures in appearance, but behaving like men and women, rose out of the featureless plains, where they had been slumbering for countless ages, and started to wander aimlessly over the countryside.

As they wandered, these Dreamtime heroes carried out the same tasks as do the aborigines of today; they camped, made fire, dug for water, fought each other, or performed ceremonies.

'Then, mysteriously, this Dreamtime came to an end, and wherever these creators had been active, some mountain range, isolated hill, valley, watercourse, or other natural feature now marks the place. When the aborigines are asked what brought about this remarkable change they reply that they do not know, but feel sure that if some wise old man of an earlier generation had been present, he could have answered the question.

'These people of the Dreamtime made everything with which the aborigines are in daily contact: the land on which the aborigines live and from which they gain their living; the food creatures that live there, the first spears and spear throwers to assist the men in capturing the larger creatures, the wooden dishes, the grinding-stones to help the women to prepare the food, and fire, both to cook that food and to keep the people warm.

'The same Dreamtime heroes also decreed the laws that govern all aspects of the secular and sacred life of the tribe; the relationship of each member of the community to the other; the ceremonies that must be performed before men can be admitted more deeply into the secret rituals of the tribe; and the supernatural penalties that all will suffer who disobey these ancient laws. The myths of these ancient times are accepted as absolute truth, and an answer to all the questions of living. The saying, "As it was done in the Dreamtime, so must it be done today," has established the laws of behaviour that all must obey.

'These myths also dominate the cultural life of the native people. They are the subject of their graphic arts; the inspiration of their music, and the core of their rich and extensive ceremonial life, the medium by which the tribesmen keep alive the memories of the Dreamtime heroes and the laws they made.'

EXTRA THINGS YOU MAY LIKE TO DO

This option is only a brief introduction to the sorts of patterns that governed the Aborigines' way of life. Remember that it is mainly applicable to desert Aborigines of central Australia. In general, these patterns differed for different areas of the continent. You could organize a group to research more about some of the following suggestions, or some suggestions of your own. You may like to pay special attention to area differences. Try to cover as many of the suggestions as possible. If you do, you will probably have a much deeper understanding of, and feeling for, the Aborigines.

RELIGION

Read the Dreamtime myth on pages 72 and 73, if you haven't already done so.

Read more myths about the deeds of the Dreamtime people.

All religions have their own beliefs depicting creation. What beliefs for example do Christian religions use? Are they very different from those of the Aborigines?

MAGIC

Beliefs based on supernatural powers are often associated with forms of magic. Was magic used in the Aborigines' way of life? If so, by whom? For what reasons? What effect did it have on a tribe?

TOTEMISM

An individual can have several totems. For example, a personal totem, a sex totem, a moiety totem and a birth totem.

From the literature, select a totem relationship and describe how it governed the behaviour of individuals.

KINSHIP CLASSIFICATION

The kinship classification suggested ways in which individuals should treat each other. One form of mother-in-law treatment is mentioned on page 65. How did a man or a woman have to behave toward fathers-in-law? Was this behaviour pattern very different throughout the continent? What other forms of kinship behaviour can you find?

CHILDREN

- Where did Aboriginal children fit into the pattern of everyday life? Were they bound by social and religious rules? Did they play games? Games you know?

LOCAL DESCENT GROUPS

Find out more about local descent groups, and other groupings such as clans and moieties.

ADULTHOOD

When do you become an adult? Is it determined by your physical development? Is it your approach to life? Is it law? When did an Aboriginal reach adulthood? What procedures were involved? Were Aborigines governed by tribal law?

MARRIAGE

Was it socially necessary for your father to court your mother before marriage? Did he propose? Or did your mother propose? Was a dowry involved? How did Aborigines become married?

CRIME

Many laws are needed in our society to control crime. Courts can prosecute those who disobey the laws. Various punishments are used.

Did the Aborigines need laws to control their citizens? What was considered a crime to them? Did they have courts of law? What methods of punishment were used?

BIRTH AND DEATH

In many religious societies, birth is a time for joy and thanksgiving. Death on the other hand, is a time for grief and sorrow. Christians believe that the Christmas and Easter periods unite all followers of the Christian religions in birth and death.

How were birth and death treated by the Aborigines? Did their religion have associated ceremonies like Christmas and Easter?

OPTION

6

The word 'arts' covers a wide range of events from painting and engraving to music, dancing, miming and story telling. This option is about the arts of the Aborigines–and the role these arts played in the Aborigines' communication system.

Communication and the Arts

Most present-day Australians go to a ballet performance just for the pleasure it brings them. Often dancing played a different role in the Aborigines' lives.

To most present-day Australians the arts are a form of relaxation and recreation. To the Aborigines they were this and much more. They were the backbone of the Aborigines' system of communications.

Aboriginal communication could be divided into two areas:

☐ that connected with the needs of everyday living–hunting, gathering food and general camp life, and

☐ that needed for passing on the sacred **Dreamtime** myths that were so vitally important to them.

COMMUNICATION FOR EVERY DAY LIVING

How do you pass on information to friends that you don't see every day? How do you find out what's happening in the world? Undoubtedly, you use some or all of the methods shown in the photos at left.

The Aborigines had to rely upon the spoken word for most of their everyday communication. So do most people. But the spoken word isn't always enough. How do you, for instance, greet a friend on the other side of a busy street if your voice can't be heard above the din of the traffic? How do you let the friend know you want to see him?

Sign Language

Possibly you use some kind of sign language—perhaps a wave or a nod, or a beckoning sign. The Aborigines had to use sign language often. A shout at the wrong time while out hunting might mean no food for the day, yet communication between the hunters was necessary to increase their chance of capturing the game. The survival of a hunting group (a horde*) of Aborigines might depend on a sign language which was understood by all members of a hunting party.

Sign language was probably the first language used to overcome communication barriers between neighbouring tribes. People today still use sign language to try to communicate with other people who speak a different language.

Spoken Word

Small hunting groups of Aborigines from neighbouring tribes were probably the first to meet. Various gestures—sign language—probably became associated with certain meanings.

Because tribes could probably benefit from trading with each other, sign language probably developed further.

Following the sign language, many neighbouring groups became bilingual.

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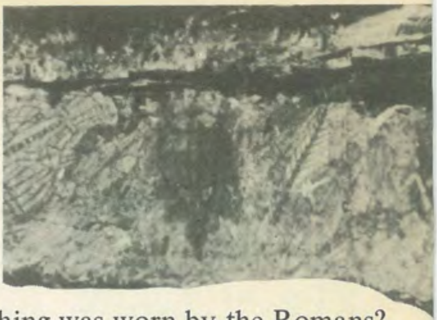
* Option 5 for more about hordes.



COMMUNICATION BY PAINTING AND ENGRAVING

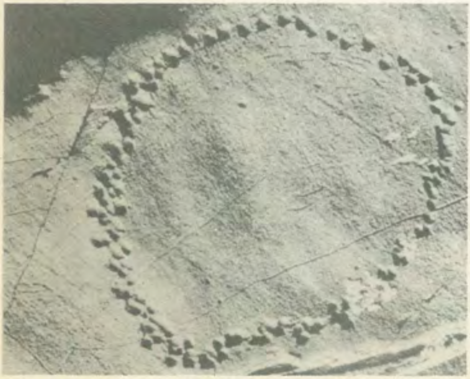
What type of clothing was worn by the Romans? What was life like in England during the Middle Ages? Who was Sir Francis Bacon? Who invented rockets? When did the last Tasmanian Aboriginal die?

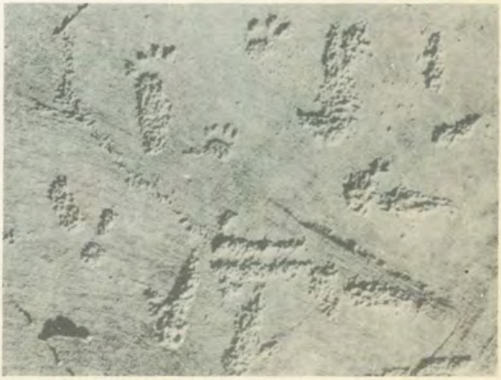
Where would you turn to find answers to these questions? Many history books and most encyclopaedias would give you the answers. Museums and art galleries also contain information and displays of history and culture.

What did the Aborigines have to record their culture and history? Look at the photos here of Aboriginal engravings and paintings from different areas of Australia. There are more photos (in colour) of Aboriginal paintings on page 56g.

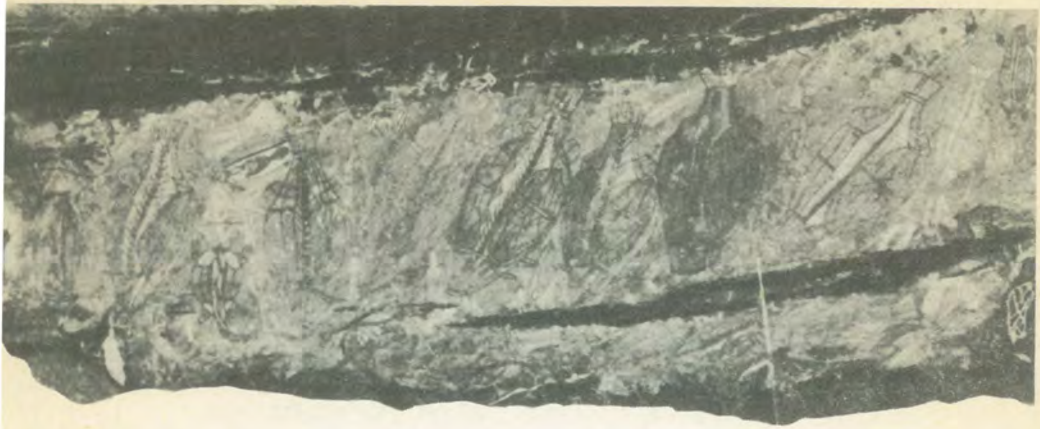
Notice that no written word appears. Symbols and diagrammatic representations were the things Aborigines used to represent their surroundings.

Rock paintings and engravings are often found grouped in areas containing notable landscape





Aboriginal rock engravings– north-eastern South Australia.
(Photos by Robert Edwards.)



features. Aborigines believe that during the Dreamtime the spirit people created the features of the landscape, the flora and fauna, and human form—the ancestors of the Aborigines. (Option 5 tells more about Aboriginal religious beliefs.)

Aborigines further believe that the engravings were done during the Dreamtime. They say they cannot interpret them, but believe they commemorate the deeds of the spirit people.

The rock and bark paintings were done by the ancestors to depict notable Dreamtime events.

Areas containing rock paintings were generally sacred sites and formed part of the display of Aboriginal history.

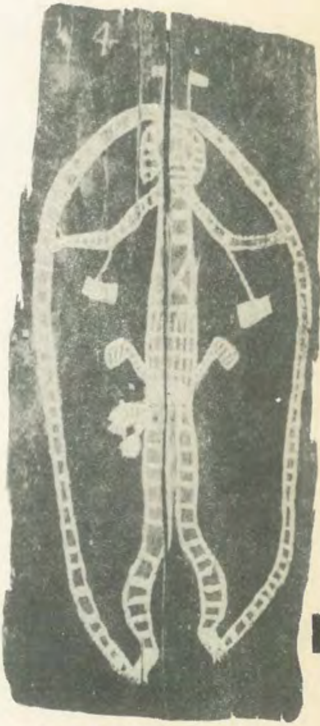
Painting sites in some areas are continually being updated, even today.

The sites were like our museums and art galleries. Bark paintings were like our text-books. When the time was right, new initiates of the tribe could be shown the sacred events of the Dreamtime from the text-book or gallery displays. To the initiated, the paintings were a constant visual reminder of their beliefs.

See page 72 for a Dreamtime creation story as believed by some central Australian Aborigines.

Aboriginal rock painting–Arnhem Land.

(Photo by courtesy of the Department of the Interior.)



Aboriginal bark painting–Arnhem Land.

(Photo by courtesy of the National Museum of Victoria.)

Communication by Painting and Engraving continued next page

WHAT PAINTS DID THE ABORIGINES USE?

6.1 Look at the photos on pages 56a, 56g and 56h. What colours were used? There is space on page 23 of your record book to make notes about the colours.

Unlike people of today the Aborigines were restricted in their range of colours.

They may have used plant dyes once upon a time, but they would have encountered problems such as:

- the availability of suitable plants, and
- the quick fading of colours from some plant juices.

They apparently found that the pigments obtained from naturally occurring rocks were more suitable.

We can suggest this because most known Aboriginal paintings are made of the pigments listed below.

TO OBTAIN	THE ABORIGINES USED
White	Gypsum or lime, which they crushed and sometimes mixed with water and/or ash.
Black	Manganese dioxide or charcoal.
Yellow	An oxide of iron known as limonite (formula $Fe_2O_3.5\,H_2O$)
Red	Another form of iron oxide called haematite (formula Fe_2O_3)

The last two substances are known as ochres.

Extensive deposits of ochres occur at Yarrakinna, in the Flinders Ranges, in the north of South Australia. They also occur in many other places, including Arnhem Land.

The Aborigines would travel a hundred kilometres or more–a long way for them–to get ochres, or they would obtain supplies through trading. We know this because ochre paintings have been found a long way from the sources of ochres.

Areas containing ochre deposits became centres of mythical and religious importance because it was believed the ochres possessed a mystical power—through their having been created by ancestral spirit beings.

Sometimes Aborigines painted with brushes. Sometimes they used their fingers instead. Sometimes they blew the pigment out of their mouths. Stencil paintings were often produced by this last method.

In the activities which follow you can try your hand at painting in the manner used by Aborigines.

ACTIVITY 1: MAKING A PAINT BRUSH

The Aborigines made their brushes by tying hair to the end of a stick or by chewing pieces of wood to give 'ragged' ends.

You could try to make yourself a similar brush. See if you can find the materials in your local environment, e.g. in your garden.

ACTIVITY 2: PAINTING

At this stage use art paper or cardboard as your canvas.

In addition to your canvas materials, you will need:

- gypsum or lime
  You may be able to get your supply from your local environment. If you have gypsum or lime that is in lumps, you will need to crush it to a powder. You could use a rock to do this.
- manganese dioxide or charcoal
  You could make your own charcoal by burning wood and crushing the charred remains to a powder. This is what the Aborigines did.
- yellow ochre: yellow iron oxide–limonite
- red ochre: red iron oxide–haematite
  Sometimes Aborigines couldn't get red ochre. But they knew how to treat yellow to make it turn red. They heated it. (See the formula page 80.) You may like to try this.

A bark painting made by a student. The paint is coming off because no fixative was used.

The powders need to be mixed with liquids before they can be used as paints. What liquids would have been available to Aborigines?

Water is the most common liquid, so you could begin by using it to mix your paints. Mix very small quantities at first to test how effective this mixture will be. You could test by painting patches on paper and allowing them to dry.

6.2 What happens when your painting dries?

You probably found that something else seemed to be needed to hold the powder together. A binding agent (a fixative) is what you want.

ACTIVITY 3: MAKING A FIXATIVE

Aborigines relied on their natural surroundings for fixatives, of course. They used fat, blood or some starchy material obtained from plants such as 'pig-face'.

The Melville Island Aborigines used three different fixatives:

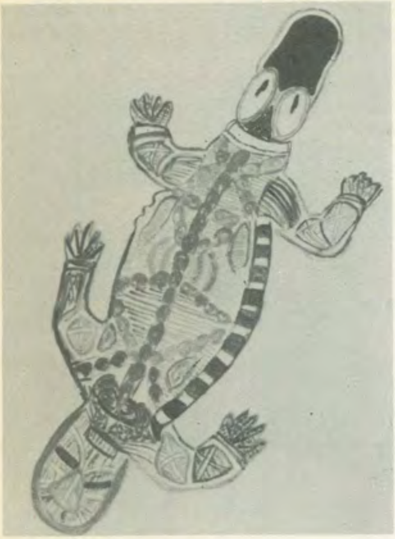
☐ the gelatinous sap of one of the tree orchids,
☐ the wax and honey of the wild bee (well mixed together), or
☐ yolks of eggs of the sea-going turtle.

Use any of the materials suggested, or some others that you think of, and do tests until you find a suitable fixative.

6.3 Make a note of the materials you use. Which one (or which mixture) is most effective?

ACTIVITY 4: THE REAL THING

Now that you are satisfied that the paint will stick, you can prepare your painting. The Aborigines' paintings depicted the world around them. Some of their styles can be seen on pages 56g, 56h, 79 and 84. You could try to use similar styles.



A student's painting, Aboriginal style. What do you think it depicts?

SACRED VISUAL ART

Aborigines also painted the human body for various religious ceremonies.

Another form of visual art of a less permanent nature was 'ground painting'. These paintings were often prepared for sacred ceremonies. Afterward, having communicated their message, they were destroyed immediately.

Even though common symbols and certain stylized figures appear in many Aboriginal paintings, only certain tribe members from the same area as the art work could interpret it correctly. Sacred art works have their own local meaning. They are part of a private religious belief that communicates a special meaning and significance only to those concerned.

(Photo by courtesy of the National Museum of Victoria—Chaseling Collection.)

NON-SACRED VISUAL ART

Dreamtime events were not all sacred. Many of the associated myths could be known only to certain tribe members, but many could be known to all. In fact their re-enactment was often a form of camp fire entertainment.

Paintings could also show these Dreamtime events, especially the bark paintings of Arnhem Land.

The painting at left depicts a myth, the true significance of which would be kept for initiated members only. For others the painting would possibly be explained as a fishing scene.

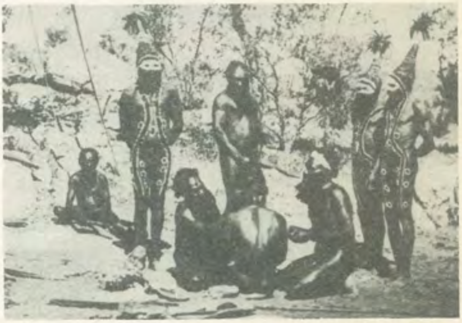
Body Decoration

The Aborigines often decorated bodies for both sacred and non-sacred ceremonies. As well as painting, they used other products from their natural surroundings, such as birds' down (especially from eagles, cockatoos, hawks and owls), blood, flowers, wild cotton, animal fur and vegetable fibres. Each bit of body decoration communicated a meaning to those who understood.

They also painted and carved their artefacts. As you can see from photos in Option 7 the designs were still stylized. There was little individuality.

It has been suggested that, in many instances, these designs were a form of communications system—reminders of private totemic* relationships with the environment. (Christians sometimes wear crosses to remind themselves of a special kind of relationship.)

Some of the stylized designs had important religious meaning.



Preparing for a corroboree. Arunda Tribe. This ceremony can be viewed by women as well as men.

(Photo by courtesy of the National Museum of Victoria—Spencer Collection.)

*** You can find out more about totemism in Option 5.**

COMMUNICATION BY DANCING, SINGING AND MUSIC

Personal and group involvement in the arts of dancing and singing are other ways of communicating. Dancing, singing and music were included in most Aboriginal ceremonies.

The dancers depicted the adventures of the Dreamtime to an accompanying musical background. A 'musical director' might lead a team of choristers in background chanting. Foot stamping, hand clapping and the beating of sticks against each other also provided background rhythm for the dancers.

In the north use was made of special instruments. Hollow logs were used as drums and in some areas the droning from a 'didjeridu' was included.

We have seen that not all visual art was sacred. Neither was all dancing and singing. These were also vital forms of popular entertainment. This was especially so in Arnhem Land where food was usually plentiful and spare time was available.

Around the campfire at night, after the day's search for food, stories of the day's events would be told. Some might boast of their prowess at throwing a spear, while others might mock someone who was careless enough to lose a kangaroo while hunting.

These stories were often mimed. The antics of the participants usually provided many reasons for laughter and gaiety.

SACRED SITES

Aboriginal art forms are an important part of the pre-history of Australia. Colonization and the resulting inroads of 'progress' have done much to destroy this art.

Fewer and fewer Aborigines are living a true tribal existence. It is believed that there are none who have not had some contact with the Western world. Because of moves away from tribal life, sacred sites are becoming less widely used.

In the past in some areas the Aborigines used to restore the paintings as they deteriorated. They also updated them. See colour photos on page 56g. Where this is no longer done the paintings and the information they can reveal can become lost.

Floods, exposure to sunlight (causing fading of the colours) and dust help to destroy these 'records'. Natural weathering eats away engravings. Vandalism, new building and dam sites etc. can also take their toll.

So that this part of Australian history is not lost, attempts will need to be made to preserve these paintings and engravings—not only for their beauty, but also for the information about Aboriginal culture that can be gathered from them.

Emu Bottom—Victoria.
Part of Australian history, past colonization is being preserved here.
Will Aboriginal culture be similarly preserved?

The Future continued next page

SACRED CEREMONIES

The importance of religious ritual decreases more and more as Aborigines become exposed to the Western way of life. Many young Aborigines no longer grow up under the fear and awe of strict social and religious taboos. They no longer go through the initiation ceremonies that once would have been so important for them, nor learn the stories of their ancestors. Because of this, they cannot interpret the events displayed in the paintings of their 'libraries'.

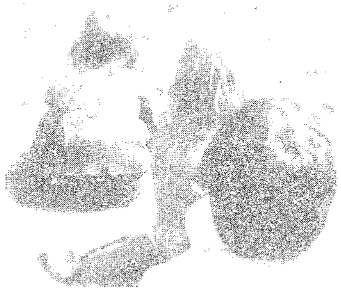
Aboriginal ceremonial dancing is becoming a lost art. Tourists tell of the dances they have seen, but these, of course, are non-sacred.

The heritage of the Aborigines is being left in the minds of the remaining old tribal Aborigines.

These old men, the Aboriginal leaders in our communities and anthropologists are acutely aware of this problem. Now more than ever before, sacred religious beliefs and ceremonies are being displayed to trusted outsiders. Sacred paintings are also being interpreted for these trusted people. Films and tape recordings made of these events will help preserve a unique tradition.

In this way, in the years to come, there should be sufficient knowledge and understanding of Australians-past to communicate correctly to future generations.

Mornington Island Dancers (from left to right) Larry Lanley, Alick Hills and Douglas Burke, performing a dance which tells the story of the origins of the constellation, the Southern Cross.



Larry Lanley demonstrates the 'didjeridu' to school children.

THE MORNINGTON ISLAND DANCERS

Mornington Island, in the south-eastern corner of the Gulf of Carpentaria, is an Aboriginal reserve with a population of about 650. The Lardil, Kaiadilt, Yangarl, Garwa, Walngi and Kalkadoon tribespeople who live there, semi-tribally, are proud of their traditional dances and songs.

To allow students to learn something of the Aboriginal people and their culture first-hand, the Mornington Islanders have formed a promotional group.

These Aborigines travel far to show some of their paintings, dances, songs and instruments—and explain their significance.

Their programs are planned to be altered annually to explain different features of Aboriginal life.

Aboriginal artefacts (including hunting implements) are also demonstrated and explained.

The program emphasizes the fact that there is a similarity between European and Aboriginal emotions although they are expressed in ways which are culturally different.

Students are charged a small fee to see the group. Proceeds are used to further education and industry for the Mornington Islanders.

EXTRA THINGS YOU MAY LIKE TO DO

This option is only a brief introduction to the methods of communication used by Aborigines in their religious and everyday life.

For some of these extra activities you could team up with others and prepare a group project on your chosen topic(s).

SONGS

Over the years various songs become traditionally accepted as part of a way of life. 'Waltzing Matilda' is one such traditional Australian song. What is it about? What do the words 'waltzing Matilda' mean?

Many Dreamtime myths were neither sacred nor confined only to certain people. Traditional camp fire songs formed part of the Aborigines' entertainment. You could use some of the available references to find out the type of stories they liked to tell.

MIME

Make up a simple story and mime it to other students. You can use gestures, facial expressions and dancing to tell the story—but no talking. You could perhaps mime a hunt for a kangaroo or emu. The idea is communication without words. If you first find out about some types of non-verbal communication used by the Aborigines, you may be able to use these in your mime.

MUSICAL INSTRUMENTS

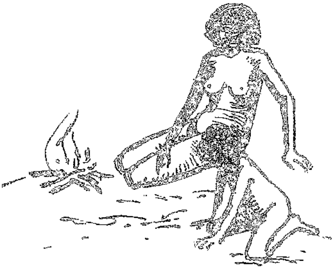
Find out more about Aboriginal drums and beating sticks, and the 'didjeridu'. Try your hand at making any of these instruments.

ART RESEARCH

Visit a museum and use available library books and resource materials to examine:

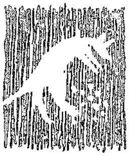
□ other methods of Aboriginal art, e.g. stone arrangements, and/or

□ the variations in art styles and patterns used in different regions.



WOMEN AND CHILDREN

Women, children and uninitiated men were not allowed to see religious sites, or participate fully in ceremonies. Did women or children ever take any part in ceremonies?



BARK PAINTINGS

How is the bark for these paintings obtained? Does it need any preparation before being used in a painting? If you find out enough about this form of art (from one of the suggested references), you could do a bark painting yourself.

AYERS ROCK

Today Ayers Rock is a world-famous tourist attraction. It is one of the physical landscape wonders of the world.

The Yangkuntjatjara Aborigines called it 'Uluru'. It was very much a part of their religious faith. Where is Ayers Rock? Find out about its fascinating eroded features and their links with the 'Uluru' tribe. What significance, for example, were the 'brain' and the 'kangaroo's tail' in the Uluru Dreamtime myths?

PLANT DYES

You could investigate the use and effectiveness of plant dyes. Use several different plants and try the juice obtained from different parts of the plant. Paint or try to dye with them.

MAKE-UP

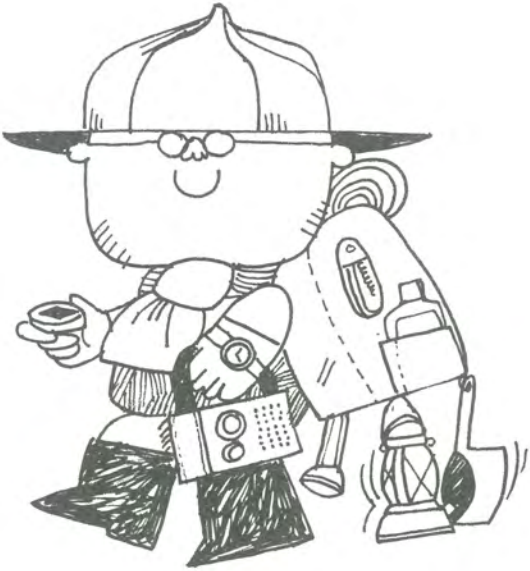
Women today use make-up to make themselves more attractive. Did Aboriginal women do the same? If so, what did they use? What about men and make-up?

OPTION 7

Man's influence on his environment depends on many factors. Technology provides him with the means to make tools, weapons and household implements. This option provides a brief look at the Aborigines' technology.

Technology

Is this you?



Most present-day Australians use a great variety of man-made gadgets (artefacts) for almost everything they do. These gadgets can be made of metal, glass, wood, or plastic (or other synthetic materials).

The Aborigines survived with very few artefacts. The only materials that they fashioned were wood, stone, bone, shell, and vegetable fibres.

ACTIVITY 1: MANUFACTURING TOOLS

Percussion Method for Shaping Stone

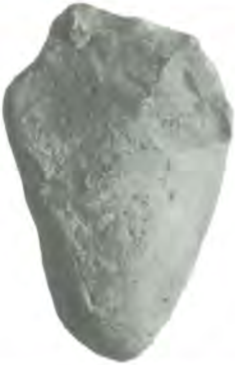
Stones with chip marks arranged in a regular manner have been found in many places in Australia. These stones (like those in the photos at left) have sharp edges. They have been hit by another stone in the way shown in the diagram below.

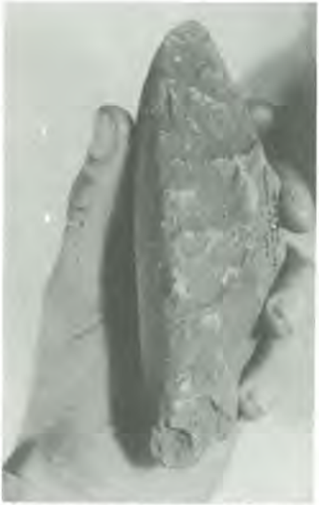
Such markings never occur on naturally broken stones. It is these markings which help in the identification of such stones as artefacts.

7.1 Compare the stones in the photos with an ordinary piece of stone that you find in your locality. What differences do you notice?

The Aborigines used any hard stones such as basalt, chert, quartzite and flint for their tools. However, materials such as flint and quartzite were especially sought after. These fracture in a regular way when hit. With continuous striking, flakes fly off leaving an irregular surface.

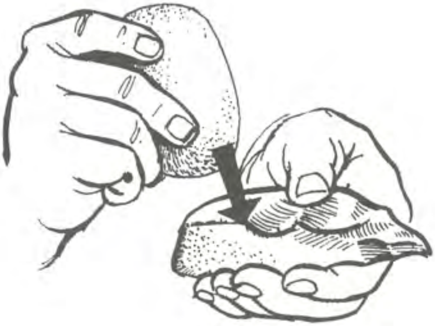
Among the tools Aborigines made from stone were axeheads.





Top photo: *Stone axe–unifacially flaked pebble, Barwon Heads, Victoria,* (X 34400 N.M.V.)
Bottom photo: *Stone implement pebble–flaked all round, Cape Otway, Victoria,* (X 21180 N.M.V.)

(Photos on this page and page 95 by courtesy of the National Museum of Victoria.)

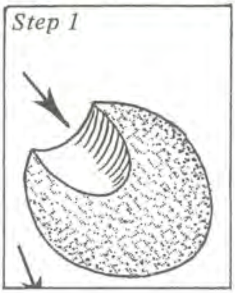


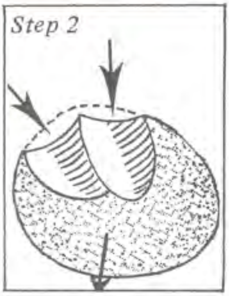
MAKING AN AXEHEAD

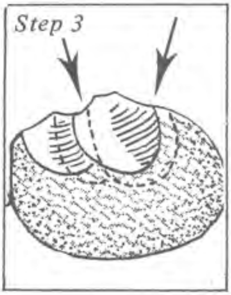
Warning: You must use safety glasses, if you do this activity of making an axehead.

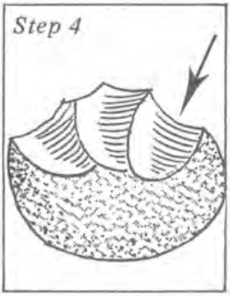
Have you seen an axe made by an Aboriginal? With some practice you could make a stone axehead yourself. You would need to hit two suitable stones together. Attempt to shape your stone by hitting it at the places shown in the diagrams below.

Keep the axehead you have made. Later, you will see how the Aborigines added handles—and you may like to try to copy them.


Step 1


Step 2


Step 3


Step 4

Pressure Flaking

The small flakes from the percussion method were often shaped further.

A pointed tool of wood, bone or stone was used. It was pressed against the flake with a downward movement —a process which is now generally called pressure flaking.

Finer tools like spearheads were made this way.

Nowadays, spearheads are often made from glass and porcelain.

Abrasion

Quite often axeheads and other stone tools were shaped further by being rubbed on a grinding stone.

Spearhead of porcelain—pressure flaked, north-western Australia,
(X 20196 N.M.V.)

ACTIVITY 2: FIRE MAKING

An Aboriginal making fire.
(Photo by Douglass Baglin, from 'The Dark Australians', by D. Baglin and D.R. Moore.)

Fire was very important to the Aborigines. They made use of it in hunting, keeping warm, cooking, bending and straightening sticks, and melting resins for binding. They would have been lost without fire. It was a necessity.

You probably know that the Aborigines made fire by striking stones together or rubbing sticks in a certain way. Page 56c contains a series of photos showing one method of fire making.

To produce fire this way you also need material (such as dry tinder or sawdust) which ignites at a low temperature and oxygen. The sawdust could come from the wood that was being rubbed.

In some areas flint and pyrites were struck together to produce sparks which set the tinder alight.

Several other methods of making fire are given in this activity.

See if you can make a fire. You could try one (or all) of the methods suggested, or devise your own.

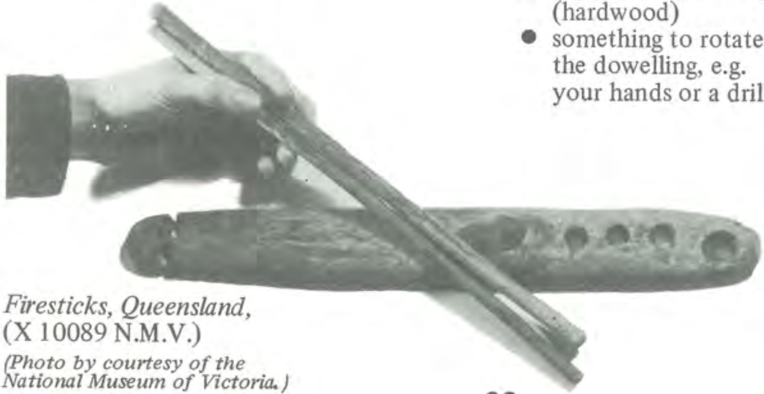
USING WOOD

You will need:

- 1 piece of softwood
- 1 piece of dowelling (hardwood)
- something to rotate the dowelling, e.g. your hands or a drill.

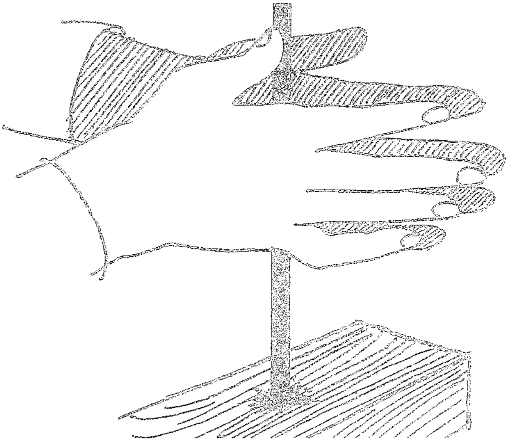
for Method A

for Method B

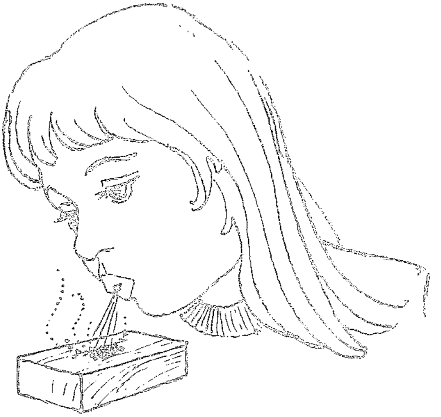


Firesticks, Queensland,
(X 10089 N.M.V.)
(Photo by courtesy of the National Museum of Victoria.)

Method A
Rotate the dowelling rapidly and non-stop on the piece of softwood. This usually produces tinder. If it doesn't, you may need sawdust or something to act as tinder. Heat generated by the rubbing can ignite the tinder.



Blow gently when the tinder starts to smoulder.



Method B
You could rub hardwood and softwood together as demonstrated by the Aborigines in the photo at right.

(Photo by Robert Edwards.)

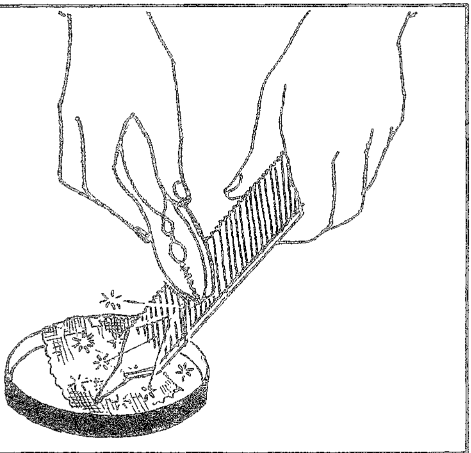
Activity 2 continued next page

USING FLINT

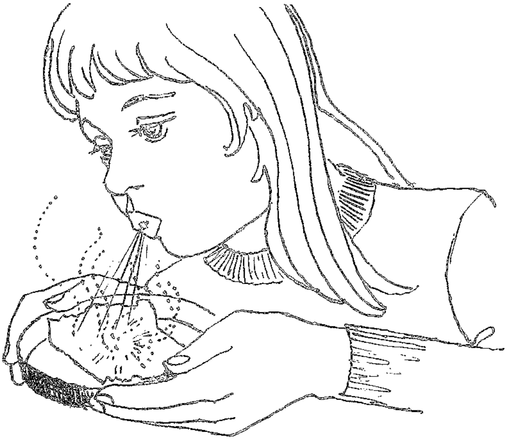
You will need:

- 1 old file
- 1 tin, e.g. a tobacco tin
- 1 well-scorched piece of linen
- 1 flint set in some dowelling (or held by pliers)
- 1 mat on which to rest the tin
- some dry tinder, e.g. sawdust.

Rub the flint over the file. Have the linen and dry tinder close to the file, so that it will catch the sparks.

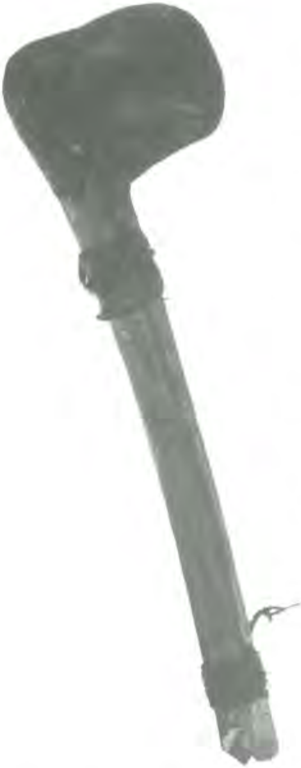


Blow gently when the tinder starts to smoulder.



Could you light a fire, or did you have difficulty? Fire making using these methods requires a high degree of skill. Many people have tried—and failed. Skilled Aborigines can produce fire in less than 3 minutes.

ACTIVITY 3: RESINS



The Aborigines needed ways to make their stone tools easier to use. For example, the addition of a handle was often very important. Resins were one of the things used to bind a stone to a handle.

Resins which are obtainable from plants, become soft when heated. When cooled, the resins become hardened. Their properties are similar to today's thermo-setting plastics.

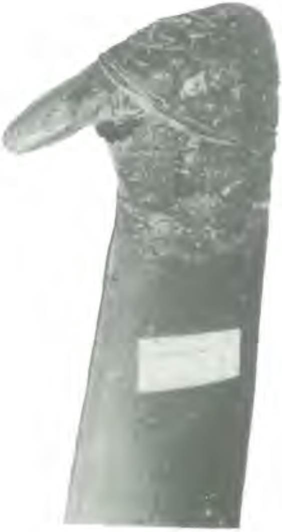
On page 56d there are photos showing the making of resin from spinifex grass.

You can examine the binding properties of resin by trying to bind a piece of stone to a piece of wood.

You will need:

- 1 small fragment of stone, such as a piece of gravel
- resin (or sealing wax)
- 1 piece of wood, e.g. a pencil
- fire–candle, matches or taper.

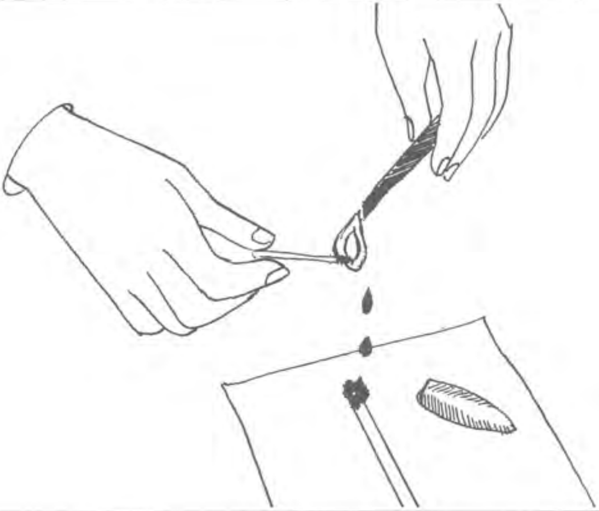
Above: *Hafted stone axe, Northern Territory*, (X 13452 N.M.V.)
Right: *End of woomera, northern Queensland*, (X 5845 N.M.V.)
(Photos by courtesy of the National Museum of Victoria.)



Activity 3 continued next page

Melt some resin by holding it in a flame.

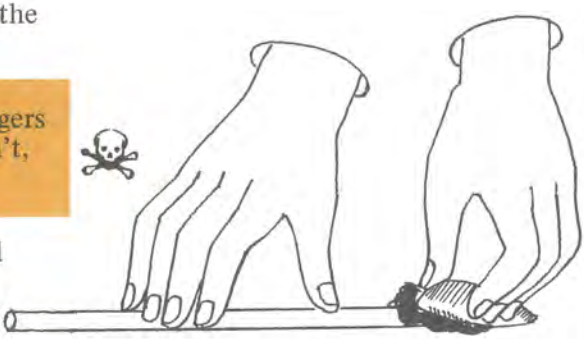
Allow the molten resin to fall on the wood.



Insert the piece of stone into the molten resin.

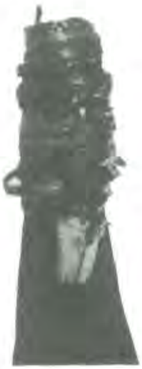
Warning: Moisten your fingers with water first. If you don't, you may burn yourself.

Allow the resin to cool and set. Try to remove the stone.



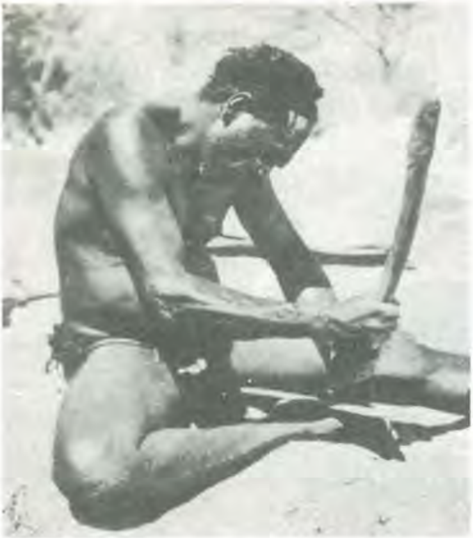
Handles were sometimes attached with plant fibres first. The fibres were wound tightly and covered with resin.

Sinews from animals also provided an excellent binding agent. They contracted and hardened on drying.



Engraving tool–a piece of wood with kangaroo tooth attached, from Batavia River, Western Australia. Note the binding around the tooth. (X 44610 N.M.V.)
(Photo by courtesy of the National Museum of Victoria.)

ACTIVITY 4: MAKING AN ADZE



Aboriginal using adze.
(Photo by Robert Edwards.)

The Aborigines carried very little with them as they moved about their territory. (See Option 4.)

One important tool was the **adze.** It allowed the Aborigines to work more efficiently.

The stone fragment at the end of the adze acted as a gouge.

You could try to make an adze. This activity will involve the techniques you have used so far.

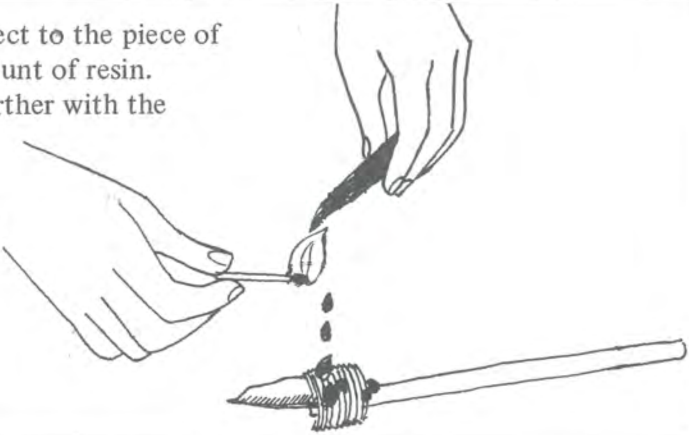
You will need:
- 1 piece of wood, e.g. dowelling or pencil
- resin (or sealing wax)
- 1 length of thread, e.g. cotton or nylon
- 1 sharp object, e.g. a piece of rock you have already shaped.

Attach the sharp object to the piece of wood by a small amount of resin.

Bind the object further with the thread.

Cover with resin.

Let the resin cool.



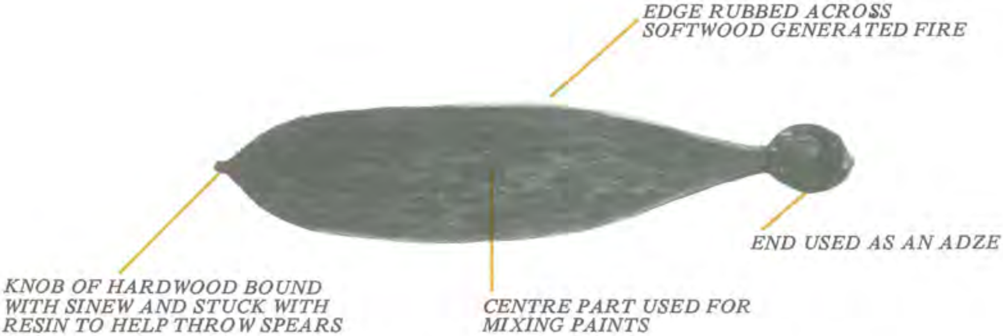
You may like to try to shape a piece of wood. To do this, pull the adze toward you in the manner used by the Aboriginal in the photo above.

You should be able to see how the adze is used for gouging.

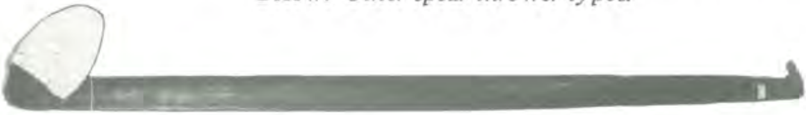
OTHER TOOLS

Spear Throwers

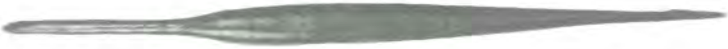
The spear thrower which the Aboriginal is carrying in the illustration on page 93 allowed greater distance and accuracy when throwing a spear. It also served many other functions as the photo below shows.


EDGE RUBBED ACROSS SOFTWOOD GENERATED FIRE
END USED AS AN ADZE
KNOB OF HARDWOOD BOUND WITH SINEW AND STUCK WITH RESIN TO HELP THROW SPEARS
CENTRE PART USED FOR MIXING PAINTS

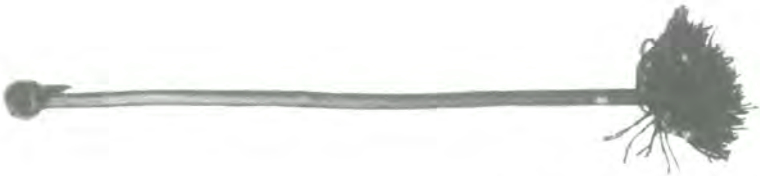
Above: *Spear thrower, central Australia,* (X 11072 N.M.V.)
Below: *Other spear thrower types.*



Gulf of Carpentaria, (X 5845 N.M.V.)



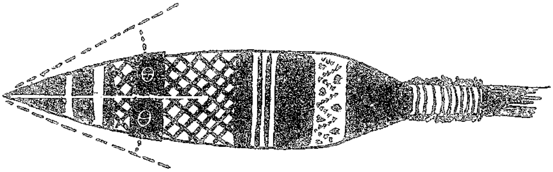
South-eastern Australia, (X 48999 N.M.V.)

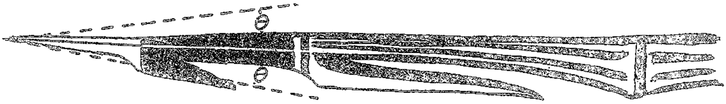


Northern Australia, (X 962 N.M.V.)

Spearheads

The Aborigines used different points on their spearheads to kill different animals. The points can be thought of as inclined planes. The smaller the angle of θ the greater the penetration.

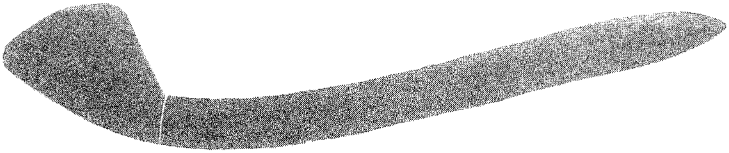




Throwing Clubs

The Aborigines also made throwing clubs by shaping bent branches.

Southern Queensland, (X 44668 N.M.V.)



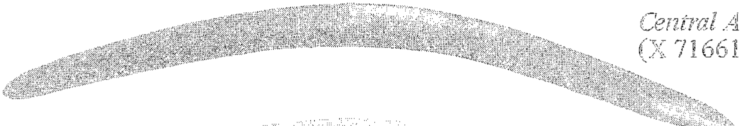
Western New South Wales, (X 49862 N.M.V.)

(Photos on pages 102 and 103 by courtesy of the National Museum of Victoria.)

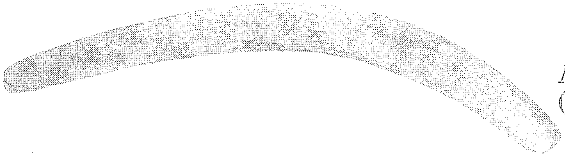
Other Tools continued next page

Boomerangs

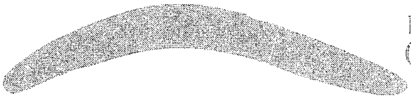
The boomerang possibly developed from the throwing club. It was used in hunting and occasionally as a beating stick to provide music. The returnable boomerang was made only in the east and west of Australia. It was unknown to Aborigines of the centre and north. In the main, it was just a plaything; the non-returning boomerang being used as a weapon. Some tribes in northern Australia did not even use boomerangs.



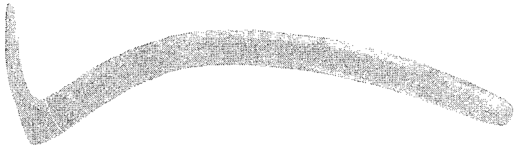
Central Australia, (X 71661 N.M.V.)



Northern Territory, (X 13980 N.M.V.)



Western Australia, (X 15796 N.M.V.)



Central Australia, (X 10048A N.M.V.)

MORE ABOUT MAKING AND SHAPING

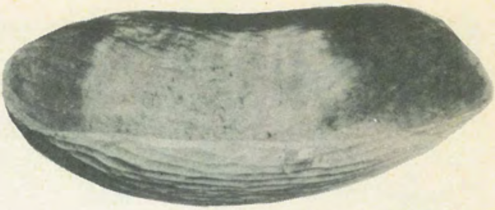
Aborigines used many materials to shape and make their implements. Bones were used as scrapers and knives. Animal teeth and, sometimes, the whole jaw were used for engraving.

Fresh bone was used for making chisels and knives. Bone which has been heated, e.g. in cooking, loses its flexibility and was seldom used.

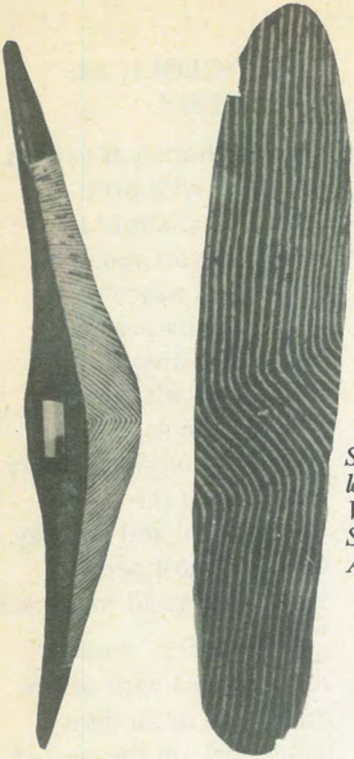
Shells were used as knives and scrapers, as well as for ornaments and containers.

Many of these materials are easy to shape. This resulted in sharper cutting edges.

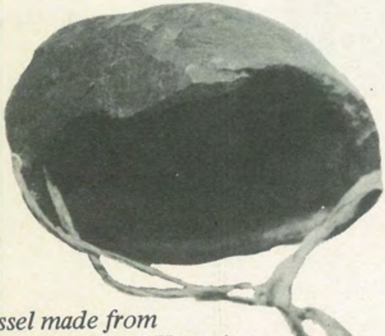
The Aborigines also made many other things. These included totem poles, shelters (page 55), dug-out canoes, other wooden weapons and utensils.



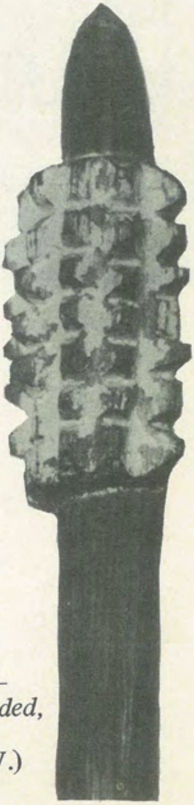
Wooden vessel
–central Australia.
(X 9859 N.M.V.)



Shield (left): *Club shield,*
lower Murray region,
Victoria, (X 1843 N.M.V.)
Shield (right): *Western*
Australia, (X 1189 N.M.V.)



Water vessel made from
the gall of a gum tree–Victoria,
(X 1527 N.M.V.)



Wooden club–
pineapple headed,
Queensland,
(X 879 N.M.V.)

(Photos on pages 104 and 105 by courtesy of the National Museum of Victoria.)

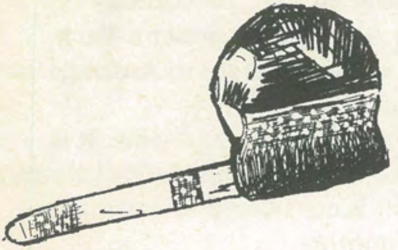
TECHNOLOGICAL PROGRESS?

The Aborigines existed very well with little technology before the Europeans arrived. The Aboriginal way of life encouraged a peaceful non-destructive interaction with nature. (See Option 4.)

Present-day technology has changed the environment and the way of life of most people. Is this change advantageous?

✍ 7.2 You could discuss with others the effects of modern technology on the way of life of present-day Australians. Record your findings on page 24 of your record book.

EXTRA THINGS YOU MAY LIKE TO DO



MAKE AN AXE

If you made an axehead in Activity 1, you could use resin and fibres to bind it to a suitable handle. If you didn't make the axehead, you could do it now.

WHERE DID THE HANDLES COME FROM?

Where did the Aborigines obtain straight handles for their spears? Was any technology required?

BEND ON BOOMERANGS

On page 103 you read about the use of different shaped spearheads. Did the different amount of bend on boomerangs have any effect? Was it just for decoration or variety?

DISCUSSION

Throughout *Australians–Past and Present,* present-day Aborigines have been included as Australians–present. Each year, many peoples of different cultures migrate to Australia. They are also Australians–present.

The mixing of different cultures can create problems. It is often very easy to misinterpret the meanings of simple customs from one culture to another. What is considered appropriate in one may not necessarily be so in another.

Patience, understanding and tolerance are needed if different cultures are to mix harmoniously.

You could consider the Aborigines and different migrant populations as sub-groups of the 'Australian' culture which began with colonization and discuss the effects of mixing these different cultures.

Some of the topics below could form part of your discussion.

☐ **Policies–national and local government**
☐ **Local community attitudes**
☐ **Assimilation**
☐ **Integration**
☐ **Citizenship**
☐ **Parents versus children**
☐ **School problems**
☐ **Language**
☐ **Religion**

Check Your Answers

Check your answers with the answers given here. If you cannot agree with a given answer, discuss it with another student, or go back to the particular section of work and read that section again.

If you are still in doubt, ask a teacher.

OPTION 1: SITE INVESTIGATIONS

1.1 Did you pick the object in the photos on page 9 to be a carpet? From the close-up photo you probably suggested that the object contained hairs or strands of something. The **pattern** in the longer distance photo makes it more obvious that the strands could be part of a carpet.

1.3 The first object placed in the site (the object in the bottom layer) has been buried the longest. The last object placed in the top layer has been buried for the shortest time.

1.4 If you had difficulty, it was probably with a cemented layer. Did you break the object(s) contained in that layer? You can imagine the difficulty such a cemented layer could cause on a real site.

1.5 A layer such as the spotted layer would appear three times in an excavation. It could be taken as three separate layers representing three different periods of time. This would be incorrect. What other problems could occur?

OPTION 2: AUSTRALIAN ANTHROPOLOGY

2.1 The most common height of people from X is 170 centimetres.

2.2 The most common height of people from Y is 190 centimetres.

2.3 For heights of 170 to 190 centimetres people from Y are smaller than some people from X.

2.4 With data like this an anthropologist could say confidently that people from X and people from Y are different as far as height is concerned.

2.6 The measurements only show that you and your partner have the same or different standing heights.

2.8 If you and your partner have similar standing and sitting heights, it is more likely that you will look alike in other ways, too, than if only one measure were similar. Of course you can't tell likeness from just two different measures. The more physical characteristics you are similar in, the more likely your chance of coming from the same racial type.

2.9 The typical adult male Aboriginal's sitting height is about 55 per cent of his standing height.

Option 2 answers continued next page

2.10 The height index for a typical adult Aboriginal male is $\frac{55}{100} = 0.55$

2.12 Parts of the human body develop at different rates and at different times. Would this affect results? The female body is different from a male body in many ways. Besides the obvious differences, think about the sitting height as a percentage of the total standing height. Is this different for boys and girls? Try to find out by taking a large sample from your class, or from the school, or from your neighbourhood.

2.16 Your results were probably different from the list on page 32. A comparison of a larger sample would probably give better agreement with the list figures.

2.17 The typical Aboriginal would probably be thin and the typical European medium.

2.18 Body shape may be determined genetically. However care must be taken in making any assumptions from this. Did you discuss possible effects of incorrect diet? Could diet and exercise (or the lack of it) alter a body shape?

2.19 Did you notice any countries off the coast of Australia? What are they? Could inhabitants from these countries have travelled across the sea and mixed with the Aborigines? Could this possibly explain the localized blood group differences?

OPTION 3: PUZZLES AND SIGNPOSTS

3.5 The findings suggest Aborigines have been in Australia at least since about 9000 years ago.

3.7 This evidence certainly suggests human occupation to at least about 30 000 years ago.

3.8 The dissimilar physical characteristics of the skulls would support a theory that present-day Aborigines are descended from different racial types.

3.9 The nasal index for the men in the photos is about 1.0. This is much closer to the typical value for Aborigines (greater than one) than for Europeans (0.4 to 0.6). This and other similarities indicate that the Australoids and/or the Ainu people are possibly of the same racial type as the Aborigines.

OPTION 5: GROUPINGS AND PATTERNS OF BEHAVIOUR

5.1 George is Mary's husband.
Charles is Jane's brother.
Elizabeth is George's daughter-in-law.
John is Mary's grandson.
Malcolm is Jennifer's cousin.

5.5 Jane would be Jennifer's 'mother'.

5.6 The women would be sisters of his wife's real mother. His wife would call them **aunties.** They would be the husband's aunties-in-law. (Almost always the 'in-law' would be omitted and they would be referred to as aunties.)

Many people were involved in the development and production of ASEP units.
As well as the ideas and suggestions contributed by ASEP staff members, valuable help was given by consultants, students and teachers throughout Australia during trials.
Members of the ASEP team associated with this unit included:

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Photographer: Brian Oakes (V) 1971–73

BUSBY HIGH SCHOOL

DATE	NAME	CLASS

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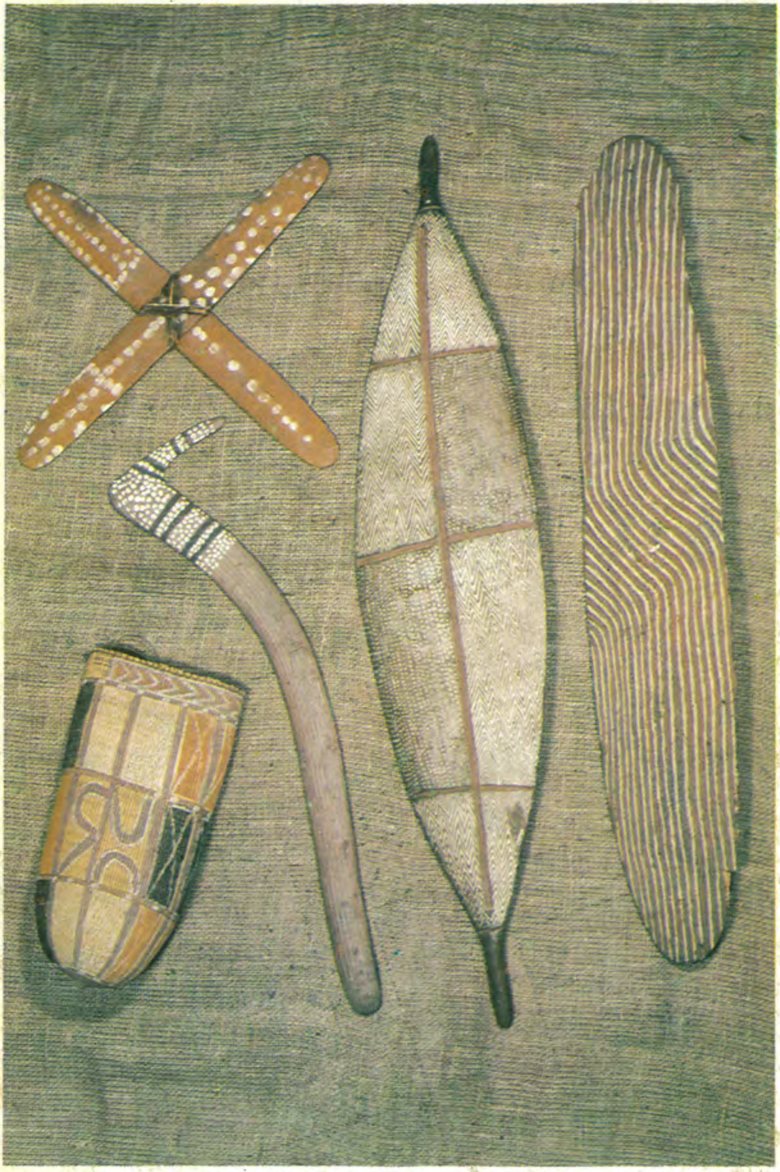

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